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REMOTE STORAGE

CLAY RECORD

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IS PRODUCER GAS A POSSIBLE FACTOR IN CLAY WORKING OPERATIONS*

BY C. L. SMITH, MASON CITY, IA.

We think that producer gas is not only a possible factor in clay working operations, but that it will become a very positive one in the burning in connection with properly designed kilns.

In the production of power, we do not see that there can be any economy in its use, except in certain cases.

We do not think it can be applied economically to present plants using periodic kilns arranged for coal or wood burning.

We shall not attempt to go into the details of construction of producers, nor discuss the different types, nor take up the technical side of the question except roughly to explain our position.

Engineers have been working on producer problems for a long time and are beginning to get some satisfactory results.

The Government tests in St. Louis have been rather startling, and have resulted in added impetus in the study of producer gas for power purposes. To be able to get one horse power from one and one-half pounds of coal in the producer as against four to five pounds in the steam boiler, means a great deal in the fuel conservation of the world, and economy in factory operations.

Gas for power purposes is a much more difficult problem than gas for fuel purposes. The gas must be free from dust, soot and dirt, and all the tar products must be broken up and converted into permanent gases, or be removed. Sulphur which would corrode the engine must be removed or reduced to a minimum.

The final products of perfect combustion—carbonic acid and moisture, must be kept out of the gas in the process of manufacture, cleaning and delivery, if we wish to get the requisite power, and finally just the right amount of air must be admitted with the gas at the time of the explosion in the engine, and must be properly mixed with the gas.

The gas must be readily combustible, and also fairly uniform in composition.

We can readily see that the engineers have quite a problem before them, but we are pleased to say they are succeeding in working it out, and already there are a number of successful plants in operation. The iron and steel manufacturers have also taken up the question, and the vast waste of fuel from the tops of the many furnaces in the country is coming to an end, and the gas is being used under the boilers, in the hot blast stoves, and is being used in the steel plants where the fuel requirements is great, and no waste supply to draw from. Recently the iron manufacturers have gone further, and the gas is being cooled and cleaned, and immense gas engines are being built for the production of power direct from the gas. This is only another phase of the use of producer gas but an important one to the iron industries in that the gas is or has been a waste product. In one instance the cleaned gas is being carried upwards of a mile, and furnished to brick manufacturers at a nominal cost. The waste gas from coke ovens is also being used, being collected and sold to other manufacturing concerns.

While all this is not pertinent to the question in hand, yet it shows the awakening that is taking place all over the world, and if there is anything good in it, the clay workers want to know it, and get in line.

For purely power purposes we believe the gas producer has come to stay, and that it will play an important part in the future.

There are two sides to the question for the clay factories, and any factories which have use for waste heat about the plant will find greater economy in the steam plant than in the producer plant.

The Efficiency of the Power Plant.

The power efficiency of gas and steam plant has been shown in pounds of fuel in the Government test, with a large percentage in favor of the gas plant. We wish to get at it in another way, and will avoid technicalities as far as possible, leaving out such items as radiation, loss in friction, and will deal only in round numbers.

We take from Haswell the following in the generation of

*Read at the Sioux City Meeting of the Iowa Brick and Tile Association January 10.

one pound of steam at 175 lbs. pressure from water at 32 degrees F.:

Sensible heat, or heat required to raise the temperature of water from 32 to 370.8 deg....	342.4 H. U.
Latent heat to produce steam.....	768.2 H. U.
Latent heat to resist external pressure—175 lbs.	83.8 H. U.

Total heat from 32 deg.....1,194.4

We also take the following from Haswell in the generation of one pound of steam at 212 deg. from water at 32 deg.:

Sensible heat from 32 to 212 deg. as before..	181.8
Latent heat to produce steam.....	892.9
Latent heat to resist atmospheric pressure....	71.4

Total heat1,146.1 H. U.

The latter is the heat that a pound of steam will contain when it is delivered into the air from an ordinary high pressure engine.

A comparison of these two sets of data shows that about four per cent of the fuel consumed is sufficient to maintain a pressure of 175 lbs. In any boiler practice we would use the exhaust steam to heat the feed water, and in this way recover theoretically about 16 per cent of the fuel value, making a total of 20 per cent.

The remaining 80 per cent is available for heating purposes, and we get greater return from the fuel in heat for drying purposes than is consumed in the power.

The following figures were taken from a diagram made by a gas producer engineer:

First—A Steam Power Plant.

Recovered in available energy.....	12%
Lost in engine friction.....	4%
Lost in condenser.....	7%
Lost in exhaust.....	50%
Lost in piping.....	3%
Lost in boiler.....	24%

Total100%

Second—A Suction Gas Producer Plant.

Recovered in available energy.....	26%
Lost in engine friction.....	4%
Lost in suction friction.....	9%
Lost in jacket water.....	20%
Lost in exhaust.....	24%
Lost in scrubber.....	5%
Lost in piping.....	2%
Lost in producer.....	10%

Total100%

For purely power purposes the gas producer plant gives more than twice the available energy that can be obtained from the steam plant.

For drying purposes we can recover 75 per cent to 80 per cent of the heat in the exhaust of the engine (steam), which would give over 50 per cent of the fuel value which we would obtain from the steam plant.

It is said that we may use the exhaust gases from the gas engine, and if so, and we recover 80 per cent of the loss, the total obtained from the gas plant would be 45 per cent. It must be borne in mind, however, that in case of the gas engine exhaust, we are dealing only with the sensible heat of the gases,—or measurable heat, and the fall in temperature would be very rapid, while with the exhaust steam we are dealing with latent heat, and there will be little fall in temperature until all the steam has been condensed into water, and is given up its 893 latent heat units, out of the 1,146 heat units which it may contain.

The gas engine exhaust may be used, but it remains to be seen how much value we can get from it for drying purposes.

In any case, the producer plant which is more expensive to install recovers less than 50 per cent of the fuel value while the cheaper steam engine plant recovers over 50 per cent of the fuel value, and such being true there is but little inducement for clay workers, having use for the waste heat, to put in producer gas engines at a greater cost to install and greater cost to maintain.

Heat Units.

Every clay worker should become familiar with heat units,—H. U. Many, however, regard them as something to shy at, like malignant microbes, or some other invisible evil thing. They are so simple, and enable us to express values intelligibly, and make comparisons, that we should cultivate their acquaintance.

If we call them cents or mills there would be no trouble, for all of us can convert the value of our fuel into mills per pound, yet the heat unit is no more intangible than a mill. In fact you can figure in mills if you wish, but we do not think that so simple.

If we heat a pound of water one degree, we call the heat necessary to do this one heat unit. You may divide the value of a pound of coal into a fraction of a mill, if you wish, and say that it requires so many mills' worth of coal to heat a pound of water one degree.

In France they take 2 1-5 pounds of water and heat it 1 8-10 degrees, and call that one heat unit, but the American Unit, and the British Unit,—the B. T. U. (British Thermal Unit), is one pound of water heated one degree. Good bituminous coal will produce about 14,000 heat units.

From the U. S. Coal Testing Reports, we note that Iowa Coal No. 5 has.....11,963 H. U.
Iowa Coal No. 4 has.....11,678
Iowa Coal No. 3 has.....11,671
Iowa Coal No. 2 has.....11,497
Iowa Coal No. 1 has.....11,443

This means that one pound of coal of each variety will heat up eleven thousand odd pounds of water one degree F.

Latent heat is the sticker with some of us, and we should get it clear in our minds. We know that it takes heat to melt ice, yet so long as the ice is melting there is no evidence of any increase in temperature. The water and the ice have the same temperature.

So also with water and steam, when the water begins to boil it has attained a temperature of about 212 deg., and the steam leaving the top of the kettle is also 212 deg., yet it takes a lot of heat to boil away a kettle of water. What becomes of this heat? It is used up in changing the state of matter from a solid to a liquid, or from a liquid to a gaseous, and we call it latent. It is not lost, however, because when we change the steam back into water, we get all this heat given up, and we can use it in our heating and drying operations.

Driers.

The use of direct heat in a dryer, except in starting up a plant, or during some interval when waste heat, or exhaust steam is not available, is rapidly becoming a thing of the past, and we cannot see any possible future for gas producers in this branch of our work.

Kilns.

Many clay workers are now considering and discussing the Gas Producer as a possible factor in the cheapening and improving the burning, and we believe the producer will play an important role in this part of our work. In considering this question, it is necessary to roughly discuss the steps in combustion of fuel. Bituminous coals are made up of carbon, hydrogen, sulphur, nitrogen, oxygen, and ash.

The first three are the combustible elements, but in order not to complicate the discussion, we will consider the carbon alone.

As previously stated the combustion of one pound of good

coal should produce about 14,000 B. T. U. This means perfect combustion.

We may burn carbon to carbonic oxide which will produce 4,450 B. T. U., or we may burn to carbonic acid, which is the complete combustion, and produce 14,000 B. T. U.

In the producer the combustion is imperfect, in that the carbon is only burned to carbonic oxide, and the gas from the producer when mixed with air, and ignited, will produce 9,550 B. T. U.

The 4,450 heat units consumed in the producer are used to distil the volatile gases, break up the steam into hydrogen and oxygen, and in raising the temperature of the gases which are carried to the kiln.

If we could deliver all this heat to the kiln and get also all the heat from the combustion of the unburned gases, there would be no loss in the producer work, and it would be an ideal method of burning.

This, however, we cannot do. The gases cool down as they pass through the flues to the kilns and the longer the flues, the more the cooling. As they cool down, beginning very close to the producer, soot and tar products, etc., begin to be deposited in the flues, and in a week's run the flues are entirely choked up, and have to be burned out, using a strong draft. All the heat from this is lost, together with the sensible heat in the gases, and that lost by radiation from the producer.

What per cent of the initial heat is lost will depend upon the location of the kiln with reference to the producer. One engineer who is exploiting gas producers, says that the average producer gas has 150 B. T. U. to the cubic foot, and one pound of coal will make sixty feet of gas. This gives us 9,000 B. T. U. as the value of producer gas,—a loss of 35 per cent from the fuel value of the coal.

We have no doubt that there are many yards that are not getting over 35 per cent out of the value of the fuel in the burning, but with properly constructed furnaces, they should get much higher percentages than this.

We cannot deliver the heat from the producer to periodical kilns and get the value out of the fuel, and to make the producer a possible factor in such kiln, we must get better results from the kilns, with less labor and cost in repairs, and it remains to be shown by gas producer advocates that there is economy in the use of the producer for periodic kilns.

The advantages of producer gas are better regulation of the combustion in the kiln, cleaner results, less repairs, and minimum labor.

To offset these are the loss in fuel value and the cost of the producer equipment, which when we consider the ducts which must be built to all kilns, is considerable.

It is possible that a very compact yard which producer gas would make possible could be laid out so that the advantages of producer gas would offset the loss, and the use of it become practical in periodic kilns, but we do not believe that a central producer plant will displace furnace firing in existing yards.

It would be more practical to construct furnaces along producer types, or to put small producers close to each kiln, and make them part of the kiln, and in this way save the initial heat generated in the producer.

In the continuous kiln the problem is different. Here the kilns are very compact,—more so than is possible with any periodic plan of kilns, reducing the producer loss to a minimum, and also the cost of installation. Moreover, the amount of fuel consumed in a continuous kiln is so small that the percentage loss in the producer is insignificant, and is more than offset by the better regulation and heat distribution, cleaner results, and less kiln repairs.

We believe in the producer in connection with the continuous kiln, and that the future will see not only a great

many continuous kilns put in, but also that many of them will be fired with producer gas.

The continuous kiln will effect a great saving in fuel,—from 50 per cent to 75 per cent, but none of this saving will be due to the use of the producer.

On the contrary there will be some loss in the producer.

The most economical continuous kiln in fuel consumption is that in which the fuel is distributed among the ware: the next in economy is that in which the fuel is burned in the kiln but in separate compartments and not in contact with the ware: the producer gas fired kiln will rank below these.

In cleanliness of results, in kiln repairs, in uniform results the gas fired kiln will take first rank.

In a producer gas fired continuous kiln with the producer a part of the kiln, we do not think the loss on account of the producer will exceed 20 per cent, and may be less than that.

If we are using 100 pounds of fuel per ton of ware in a coal fired kiln, we would require 125 pounds in the producer on the basis of 20 per cent loss. With coal at \$3 per ton the cost of the fuel in the producer fired kiln would be about four cents per ton more than in the coal fired. This and more we will get back in cleaner product, better results, less kiln repairs, and minimum labor, etc.

Engineers are working upon improvements in the producers so that the gas made will be permanent,—that is, that all the tar products, etc., which are deposited in the flues with any reduction of the sensible heat of the gases, shall be broken up and converted into combustible gases which will remain such at low temperatures.

We have no doubt this will be worked out, and it will be a decided advance in producer work, but in its present stage, such producers are impossible factors in our enterprises on account of the greater loss of fuel in their operation.

We must be content for the present with the common producer, with its attendant irregularity in the gas composition, and the flue deposits, etc., but with all this we believe that there is a good return in better results, in the use of the producer with a continuous kiln and that it has come to stay.

BRICK BETTER FOR HIGHWAYS?

Is it cheaper to pave country roads with macadam than with brick? This question is being figured out by Pennsylvania state highway officials and also by other engineers. The latest belief is that the brick construction is the cheapest; not in actual cost at the time of building, but in the ultimate cost after several years of use.

Various roads built by the state highway department, including the road between Williamsport and Cogan Station, are furnishing convincing proof that macadam is one of the most expensive of road building materials. It can be constructed generally for about one dollar per square yard but the cost of repairs to it is fast proving to be heavy. This is not necessarily due to the fact that it is macadam, but to the present method of conducting repair work, which is entirely in the hands of township supervisors. These officials, as a rule, are not familiar with scientific methods of repairing stone roads and consequently they cause to be expended much unnecessary time as well as expense.

Brick pavement, with gravel foundation and sand filler, can be constructed in the country for about \$1.35 per square yard. This cost does not include bridges, culverts, or grading, but expense for these features is alike in both cases. Curbing is necessary for brick pavement and the state will not furnish the necessary expense. That feature stands as the principal barrier to the construction of brick roads.

[SOME ESSENTIAL POINTS ABOUT GLAZE CONSTRUCTION

No clayworker's education can be considered complete unless he knows something of the underlying principles that govern the construction of glazes. Not that the average clayworker has frequent and urgent calls for such knowledge, since, apart from anything new, glazes do not call for frequent readjustment in clayworking establishments. A cheap reliable glaze, that is exactly suitable for the work, and gives little or no trouble in the burning, having been once obtained, may be in uninterrupted use for years. For this reason a clayworker may pass a lifetime in the management of a pottery without any questions turning upon the construction and adjustment of a glaze being raised. Nevertheless, an occasion may arise, for improvements are always possible, and this is an age of research and investigation. It is, moreover, a difficult matter to keep one's trade, for any length of time, in any given particular groove, and he is best prepared for immediate and prospective changes who is best informed upon the higher technics of his art, says a writer in the *British Clayworker*.

It is not too much to say that the number of glaze receipts current in the clayworking industry are far in excess of the number required. Many old-time glazes are, in constitution, complicated enough to satisfy the most exacting taste; they are fearful and wonderful to a degree. However, an exhaustive inquiry into their many peculiarities is quite outside the scope of this article. It will be sufficient for all practical purposes to confine matters to glazes falling between cones 7 and 9, since they cover the burning temperatures of practically all the glazed bricks and general stoneware pottery of the country. Granted that, in the light of modern knowledge, all the complexity of old-time glaze construction was quite unnecessary for the work, it must not be assumed that a given glaze, capable of fulfilling each and every requirement, may be at all times constructed. Some little adjustment is generally necessary to bring the glaze into full agreement with the body it covers, to say nothing of considerations of colour, or of the texture, brightness, dullness, etc., of the finished glaze. Be this as it may, the clayworker will find little or no difficulty in the matter provided he follows out the instructions herein contained.

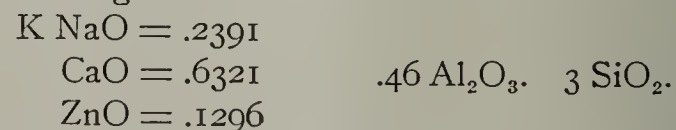
In the first place, it is by far the better plan for the clayworker to construct his own glaze straight away than to spend time and money in endeavouring to adapt some outside glaze for his wares. It should be mentioned, in passing, that these remarks are not directed to soft lead, or fritted, glazes; they have to do with ordinary felspathic glazes, maturing at about 1,280 deg. Centigrade. The first two important points to be observed in their construction are cheapness and simplicity. Hence, in the matter of fluxes, the clayworker must limit his choice to felspar and whiting, and, apart from the economy attending the use of these substances, no more satisfactory materials could be selected for the work. Clay and flint will complete the selection. The clay should be china-clay for choice, since its function is to introduce alumina into the glaze; and the best china-clay is rich in alumina, besides being pure, free from iron, etc., and uniform in composition. The flint will, of course,

be the ordinary water-ground flint of commerce. Given these four materials, practically any ordinary pottery glaze, maturing between 1,200 deg. and 1,300 deg. Centigrade, may be constructed, and a very few experiments, at small cost, will enable the clayworker to adjust the glaze to any ordinary and usual pottery body that may be employed. A little oxide of zinc may be used, to brighten up the glaze, to the extent of some two to four per cent.; but it is not an essential constituent of the glaze.

To make up the mixture in such a way as to give the simplest means for ready adjustment should be the first aim of the clayworker. To this end the quantities for the felspar and whiting respectively must be definitely fixed and adhered to. Let, therefore, eighty-eight parts of felspar, by weight, be taken, together with thirty-six parts of whiting. This will be the unalterable working base upon which all the experiments will turn. Take the following mixture:—

Felspar	88
Whiting	36
Calcined china-clay.....	16
Unburnt china-clay.....	8
Oxide of zinc.....	6
Flint	36

This mixture should be ground to pass a 100-mesh sieve. There is nothing in the mass to settle out readily; therefore it will remain uniform in composition for a long period of time with very little stirring. The idea of calcining a portion of the clay is not so general in British clayworking establishments as in those of Germany. It affords a ready method of introducing varying quantities of alumina into a glaze, without making the glaze mixture unworkable. Many glazes suffer in consequence of an undue preponderance of raw clay in the mixture; indeed, it may be taken as a safe working rule to keep the unburnt clay down to, say, five per cent. or thereabouts, putting in the remainder in the ground and calcined condition. The method deserves to be more widely known. The foregoing glaze mixture will admit of many variations, in the matter of clay and flint, in accordance with the working requirements of the finished glaze. Its rational formula may be expressed in the following terms:—



The glaze will give, at the temperature before mentioned, a fine glass, slightly milky and somewhat dull. It will not pinhole or crawl, while shivering, as may be expected from the low content of flint, is quite out of the question. However, it will probably craze. Now crazing is by far the most troublesome, as it is the commonest, defect in pottery glazes that the clayworker has to contend with, and, generally speaking, in a glaze of the type under discussion a small addition of whiting, an increase in the proportion of clay, or a higher content of flint, will suffice to overcome the crazing; but in this case the whiting, together with the felspar, will remain as quoted. Hence, the solution of any crazing difficulty must be sought in the relative proportions of alumina and silica present in the glaze.

The extent of the crazing must, of course, be taken into

account. It may exist badly in the finest network possible, or it may show merely as a few long isolated lines. In the former case an addition of flint to the body covered by the glaze is recommended, but for slight crazing a readjustment of the clay, or, more strictly speaking, of the alumina and silica content of the glaze, will suffice. Suppose the case of the foregoing glaze crazing, and that the crazing is of a nature that the glazed surface gives, roughly, an average area of a quarter of an inch for each division of the crazed surface. This would not be classed as severely crazed, neither could it be classed as lightly, or slightly crazed; it would admit of a midway classification. This is a case that calls for a higher silica or alumina content; that is to say, that keeping the felspar and whiting constant, the alteration is made by the direct addition of flint or alumina. The addition of thirty parts of flint would give, approximately, another molecular equivalent of silica (SiO_2) to the glaze, with a rational formula of about 4 SiO_2 , as against 3 SiO_2 in the original glaze; and this addition would just about clear the crazing, and give an excellent glaze at the temperature mentioned. Of course, the addition of fifteen parts of flint, or seven and a half parts of flint, would mean $.5 \text{ SiO}_2$ or $.25 \text{ SiO}_2$ respectively, by way of added difference to the rational formula, or, on the other hand, subtracted difference, if taken away.

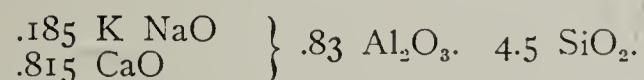
The crazing may be stopped by means of alumina. An addition of four and three-quarter parts of alumina is practically equivalent to a one-tenth addition = $.1 \text{ Al}_2\text{O}_3$ to the original rational formula; and this would clear the crazing quite as effectively as the flint. Should the direct addition of alumina be objected to, on account of the cost, the addition may be made by means of the china-clay. Thirteen parts of unburnt china-clay, or ten and three-quarter parts of calcined china-clay, would contain the amount of alumina previously referred to; but this would mean an addition of, say, six and a quarter parts of silica, as existing with the alumina in the clay. Hence it would be necessary to take off six parts of flint from the original thirty-six parts in the mixture, in order to preserve the original silica content. The oxide of zinc is, of course, the most expensive item in the glaze. However, its use is a matter of personal choice. Zinc certainly brightens a glaze and, to some extent, acts as a flux; it also, under certain conditions, gives opacity and whiteness. On the other hand, certain proportions tend to clear and soften a glaze, giving a greenish coloured glass. But for the glaze under discussion the oxide of zinc may be entirely thrown out, its acceptance or rejection having no bearing upon the points at issue.

Such are the means at the clayworker's disposal for dealing with the commoner glazes of a pottery. But there are exceptions; and exceptional cases will call for exceptional means. Sometimes a necessity arises for disguising the natural colour of the manufactured wares, and thus a glaze of greater opacity than that of the example given is required. Much may be done in this direction by raising the amount of calcined china-clay in the glaze quoted. This, however, opens up certain difficulties. The addition of alumina and silica raises the melting point of a glaze. This may be stopped in part by keeping down the silica as much

as possible, though only at the expense of brightness in the glaze, with the possible use of a little more whiting to counteract the hardening effects of the added clay. It is surprising how much of clay that may be worked into a glaze with the assistance of whiting. Taxile Doat, late of the National French Pottery at Sevres, gives a remarkable glaze of this character—

Felspar	= 80 parts
Calcined china-clay.....	= 64 "
Unburnt china-clay.....	= 28 "
Whiting	= 54 "
Flint	= 76 "

which is about equivalent to the following rational formula:—



This glaze works well at cone 8, and even slightly lower if ground, say, 1,280 deg. Cent., but it is a very dull glaze. It was used upon the great architectural fragment exhibited by Sevres at the Exposition in 1900 (Paris), giving pleasing contrast with bright glaze effects. However, attention must be paid to the purity of the china-clay, which must be burnt, or calcined, under conditions of oxidation. To this end only the finest quality of china-clay should be employed, burning pure white. The presence of iron, particularly under the influence of reduction, gives harsh cold, grey tints to the glaze.

Such, in brief, are the more important points to be observed in the construction and adjustment of glazes, at least of those common to the manufacture of glazed bricks and general pottery. In cases of doubt or difficulty a few experiments upon the lines suggested should be helpful in the highest degree.

SIoux CITY BRICK AND TILE WORKS WILL ADD NEW EQUIPMENT.

Plans for new machinery and equipment which will more than double the capacity of its Riverside plant have been completed by the Sioux City (Iowa) Brick and Tile works, and the grading for an addition to the plant is already begun.

When the improvements are completed next spring the Riverside yards of the company will have a capacity of 90,000 bricks per day, or 50,000 more than the present capacity. This will give Sioux City one of the largest brick yards in Iowa, and will add to its standing as a large brick manufacturing and distributing center.

A large continuous kiln which is to be constructed will be used largely for the manufacture of building and drain tile, which has become an important factor in the output of the yards. A new drier also will be added, while the pressing machinery now on the ground will be run to its full capacity.

The additions will mean the employment of nearly twice as many men as are now on the pay roll.

The company has decided to double its capacity because of the increased demand for brick, due to the large amount of building now being one in Sioux City and the surrounding territory. The demand for drainage tile also has increased rapidly, as farmers have learned to appreciate the good results to be obtained by its use.

SECRETARY DUERR'S ADDRESS TO THE
THIRD MEETING OF THE NATIONAL
ASSOCIATION OF MANUFACTURERS
OF SAND-LIME PRODUCUS

We meet again after a year of successes and failures.

From the general report received, I am glad to see that it has been principally successes; perhaps not the successes financially that we had hoped to realize, or that we would have liked to have had. This feeling may be due in a large extent to the fact that a certain amount of dissatisfaction nearly always exists when we make a certain sum, for we feel that more might possibly have been made.

I feel satisfied, however, that we have much to congratulate ourselves upon.

First, by improving our product and our output, we are gradually forging ahead.

Second, a fact perhaps even more important, we are overcoming rapidly the prejudices of the public, for daily we are gaining customers who only a short time ago would not even listen to us.

Sand-lime brick has come to this country and has come to stay. Every day it is becoming a more important factor in the building world. A year ago I was constantly receiving letters for suggestions and help in the introduction of sand-lime brick into new localities. These letters are becoming fewer, and I am, on the other hand, receiving more letters from various plants stating that they are full of orders and have been all the season. I know of several plants that have been so busy that they were not even able to accumulate stock during the winter season.

There have been a few failures, which is to be expected. There have been some discouragements, but that has been found also in all new industries.

Perhaps one of the greatest advances that has been made in the past two years since the organization of this Association is that of the improvement of the machinery. This is largely due to the energetic and sympathetic manner in which the machinery people have grasped the situation and have come to the rescue.

Still another important indication of development is that of the absence of the promoter. We hear less today of systems, patents, patent rights, etc., than we did two years ago; and I feel that the Association has done much to protect the innocent public from being robbed. One or two concerns that were very prominent in this method of promoting plants and selling patent rights have met their deserved doom and have fallen by the wayside. The concerns that have been more conservative, more honest, have reaped the results of their work, and, I am glad to say, are still with us.

The Association has not made the increase in membership which I would liked to have seen. This may be due to a number of causes; one of them, and the principal one, I believe, is a feeling that a mistake had been made in attempting secrecy.

At the meeting last year, it was felt that the Association had gone to considerable expense in obtaining information which was valuable to its members, and that in order to defray the expenses it would be necessary to assess the members an amount above the dues sufficient to pay for the work. After considerable discussion it was decided that if the proceedings were sent broadcast it would be difficult to raise this money, as unfortunately many members would drop out and those who were not members would not see the necessity or desirability of becoming members if they secured all the information they wanted without paying for it. It was, therefore, decided not to publish the proceedings, but to have them bound in book form and furnished only to those members who paid their dues and assessments. It now appears that in the minds of a great many of the members, as well as outsiders, this was a mistake. That secrecy has cast a

sad, mysterious cloud over the industry, and has been detrimental to the industry.

Personally, I do not agree with this view, as I can not see wherein secrecy in the Association, or its methods of producing the materials, should have any effect whatever upon the public who consumes the material. They are not interested in what we do in our Association, nor are they readers of the trade journals.

In order for the Association to be of any benefit to its members, it must accomplish certain results for the members.

First, it must help its members to decide what are the best machines to be used in the manufacture of the brick;

Second, it must help its members to decide what are the best methods to be adopted in the making of the brick.

Third, it must help its members to decide what are the best methods to be adopted in placing those brick before the public and upon the market.

Many of us do not appreciate the value of science; therefore, we are not in sympathy with employing so-called experts to help us out. None of us are so expert ourselves, however, but that we can learn something from a scientist, and we can not expect men who give their time and lives to the study of science to do this for the love of us. Therefore, it is necessary for the Association to have money to make investigations and to employ assistance. In order that we may have all these things, the members of the Association must expect to contribute cheerfully and plentifully, for it is at this stage of the industry, when we are in the midst of development, that we need the most assistance.

In a few years from now, when everything is running smoothly and we are able to smile, we may not need an Association for any other purpose than to meet and congratulate one another and help spend the profits by taking a few days off.

I am not in sympathy with the man who came to the meeting last year and voted for the assessment and took up a lot of time by asking numerous questions and was given a great deal of information, which he acknowledged to me personally was invaluable to him, and when I sent him a bill for his dues and assessment, he at first ignored the bill and afterwards wrote me that he did not see the necessity of belonging to the Association, that it was not worth the money to him.

If we are willing and ready to stand together and help one another and are willing to contribute our pro rata share of the expenses (these expenses need not be more than we are ready and willing to vote that they should be), then I am heartily in favor of publicity of every nature and kind.

On the other hand, if it is expected that three or four should stand all the expenses and the others should reap the benefits, then I am decidedly opposed to publicity.

The report of the work accomplished by the Secretary is brief, and, I think, you will readily see the cause.

It was desired to make up a printed list of all the towns, giving the number of buildings and brick used, and distribute this list among the members; so that when the architects and builders asked, "Where are these bricks being used?" you could give them one of these lists.

I sent to each member a request to give me a list of the number of buildings in which their bricks had been used, the names of the towns, and the approximate number of bricks used. To this letter I received about six answers. So that project had to be abandoned.

Then, when I wrote to all the members, stating that if they would send me a fair sample of their bricks and sample of material which they were using in making the bricks, and tell me exactly the methods they used in the manufacture, the materials would be examined and analyzed and the bricks tested, and from this table would be made up a state-

ment which would indicate what material and what method produced the best results.

This was all to be done without expense to the members or to the Association, except the trouble it would put them to in order to collect these materials, box them up, and the expense of expressage. (Dr. Lazell had volunteered to do this work free of expense to the Association.) I received samples from so few, and some of these were sent "Collect," that it was useless to attempt to get any information which would be of much value.

All this would indicate that either you are satisfied with the results you are obtaining, or else you have no interest in the work that the Association is trying to accomplish.

I am a firm believer in the fact that we can not do much good if we do not attempt to carry out such ideas; it is just possible, however, that merely to meet once a year in a social way and talk over things in general, will be the more successful way of conducting the Association. In the latter event, there will be little or no expense connected with the Association. It would be decidedly easier for the officers of the Association, as last year's meeting was voted an extremely strenuous one, and many of us were thoroughly exhausted from our efforts.

The Program Committee this year decided to have fewer papers and leave the time open for more discussion, more social intercourse. I would, therefore, suggest that if the program does not touch upon some points which the members would like to have discussed, that they call our attention to it in order that a time can be arranged for discussing such matters as have been omitted from the program.

COMPARATIVE COST OF CONSTRUCTION, MAINTENANCE AND OPERATION OF CONTINUOUS AND DOWN- DRAFT KILNS*

BY JNO. B. MILLAR, TORONTO, CANADA.

In approaching this question I want to qualify my remarks by saying I would not advise anyone from a statement I am about to make to decide at once to hurry home and construct either continuous or down-draft kilns without first carefully considering the process of burning best adapted to his particular clay. If he cannot decide for himself, the services of someone who is thoroughly practical should be secured who can, before the investment of large sums of money, determine what is best to be done, as the change may be at best but very little better than the old scove or case kilns for the particular clay in question.

There are people in Canada at the present time who are not only putting all they have but getting capital invested who do not know clay from stone. A case in point which lately came to my notice is too good to keep. I received a sample box of clay with a request that I should test its qualities for dry-pressed brickmaking and report. I did so, and found that while it would make a passable soft-mud or stiff-mud brick, it was of no use for dry-pressed and I made a report accordingly. I suggested that they get someone near by who could select the most likely material but the gentlemen evidently thought that they knew what they were doing and after a few weeks I received a second package containing boulder stones with a request that I have samples made from them. They were not regular hard-heads as we

know them, but were dug from a rotten shale bank, and I saw traces on all sides of the stones that he had good material. I wrote again, suggesting that instead of being so very careful in selection, he would send some of his bank as it came. The result was a very fine sample of brick material. I have seen plenty of brick, well made, and after being burned, only yielding 60 to 75 per cent of salable brick because they were not burned in a continuous kiln. On the other hand brick made from clay, taken within twenty-five feet of the clay from which the former brick were made, were only a very poor quality of inside brick, because they were burned in a continuous kiln. Gentlemen, it all depends on what you have to burn and what you wish to produce as to which class of kiln is best for your purpose, and not altogether on the first cost of kiln or the difference in price of operation. To be sure, there are materials which you can burn in either class of kiln or without either class for that matter, and make a first-class brick, but they are by no means plentiful where brickmaking is carried on in Canada to-day.

Now, comparing the cost of construction when we are considering kilns of first-class construction of large size, say a down-draft of 200,000 holding capacity, well-lined throughout with fire-brick and properly stayed, with a continuous kiln of from three-quarters to one million holding capacity, well-lined throughout with the same quality of fire brick and built as in the case of the down-draft to require the minimum amount of expense for repairs, there would be very little difference in cost per thousand of holding capacity of kilns. In the one case you must have a large stack to insure success; while in the case of the down-draft kiln, almost anything will serve for a stack; in some cases a series of chimneys such as would be used on a house being employed. There are various kinds of down-draft kilns as there are various kinds of continuous kilns.

The round down-draft kiln battery, in which all the kilns use the same stack is the cheapest and I believe would be very much cheaper to construct on a basis of holding capacity than any class of continuous kiln we know of in this country to-day, if properly built. When you come to consider the cost of maintenance it is rather a difficult problem; so much depends on design, workmanship and the foundation on which our kiln stands. These all being of the highest order, then I believe the down-draft kiln will cost considerable more for maintenance than the continuous kiln, and I would say the difference would be 50 per cent in favor of the continuous kiln when furnaces, grates, etc., are considered.

Now, I know some of you are getting uneasy, for the most serious part of all to manufacturers. For whether using continuous, semi-continuous or down-draft kilns, the fuel bill is continuous. The operation of the down-draft kiln is, of course, the most expensive, costing from \$2 to \$2.25 per M. for fuel with coal at \$3.75 per ton and wood, at \$4 per cord for drying off. This is for pressed brick. For sand stock it would be a trifle less, for good hard burned brick, and about 27 cents per M. for labor.

The continuous kiln, when properly filled to give the fire a chance to warm up the kilns in advance of those on the fire, and handled by competent men, using a good grade of coal, will run at from 37½ to 50 cents per M. for fuel, depending largely upon the condition of material when set in the kiln and on climatic conditions, over which we have no control. The cost of labor per M. will run at from 12½ to 13 cents per M. This would be, in a kiln of good size, such as I spoke of before, and in smaller kilns I would say the cost would be probably 25 per cent more for both fuel and labor.

*Read before the Canadian Clay Products Manufacturers at Toronto, Dec. 16 1906.

THE USE OF EXHAUST STEAM IN A BRICK-YARD*

BY A. M. WICKENS, TORONTO, ONT.

I remember with pleasure your convention of last year at Hamilton, which I greatly enjoyed, and I hope your deliberations at this convention will be fully as useful and enjoyable as those of last year.

Since last year I have paid considerable attention to the clay industries of Canada, and find the business to be one of great magnitude, and also one of remarkable growth.

This is Canada's growing time, the twentieth century—Canada's century—and the clay industries are keeping abreast of the time. My opinion, as an observant traveling man, is that the present wave of prosperity is sure to last for several years yet. With the great Northwest filling up rapidly, with the succession of remarkable crops in that country, together with the enormous amounts of money to be expended in transcontinental and other railroad lines, our prosperity is assured for many years.

In taking up the subject allotted to me—"The Use of Exhaust Steam in a Brickyard"—I may say to you as the cook, who had a great name for making hare pie, said to one who inquired how the pies were made. He answered, "First catch your hare." So in this case, we say, first make the steam; and this part of the subject is worthy of a few minutes' consideration.

Now there are boilers and boilers. A boiler well designed as to its heating surface, correctly set in its brickwork, with the correct proportion of grate area to the heating surface, if intelligently fired, will evaporate from eight to ten pounds of water for each pound of coal burned; while one poorly designed, badly set and carelessly fired, will only evaporate from four to six pounds of water per pound of coal.

In speaking of a well-designed boiler, we mean that the proportion of heating surface in the tubes should be right for the active heating surface of the shell. The tubes should be so spaced and arranged that the water circulation is free, still keeping the maximum number of tubes.

Having generated the steam, we now send it to the engine cylinders, and this is also a point that should be carefully considered. An automatic cut-off engine, with the cylinder well proportioned for the work required, will deliver 1 h. p. for from 28 to 34 lb. of water per hour; while a throttling engine, badly proportioned for the work, will use from 50 to 60 lb. of water per h. p. per hour.

Now let us consider the difference between these boilers and engines. Take the best design of each and say you require 75 h. p. With a first-class outfit, the boiler will evaporate 9 lb. of water for one pound of coal and our engine will require 32 lb. of water per h. p.; that is, we get 1 h. p. for 3.55 lb. of coal. With a poor plant using 55 lb. of water per h. p. in the engine and evaporating only 6 lb. of water per pound of coal, it takes 9.3 lb. of coal per h. p. per hour, or nearly three times as much. A first-class plant will use—for a 75-h. p. engine, 262.5 lb. of coal per hour, while a poor plant will use 679.5 lb. of coal per hour, or for 10 hours 2,625 lb. for one, against 6,795 lb. for the other. Estimating coal at \$4 per ton; one means for a 10-hr. run, \$5.25; the other \$13.59. I think I hear some one say: "But we only run part of the year and cannot afford to pay a high-class man." That is a mistake; a first-class plant, run by a good man will save enough in coal to pay the interest on extra money invested, the extra wages for a good man and still leave a profit for the proprietor.

We now come to the use of exhaust steam. The first use it should be put to is that of heating the feed-water for the boiler. A first-class heater will heat feed-water from

50 deg. to 204 deg., thus adding 154 deg. of heat to the incoming water. This represents a clear saving in fuel of 15 per cent over putting the water into the boiler at a temperature of 50 deg. Beside this, the hotter water going in will extend the life of the boiler. Again, in heating feed-water up to 200 deg. or over, it begins to deposit the salts and alkalies contained in all waters. Now if these deposits occur in the heater, it is very much better than having them thrown down in the boiler, thus forming a heavy scale. A thickness of 1-16-in. of scale means more fuel, as scale is a good non-conductor of heat.

In accomplishing all the above, it will condense about 2-11 of the exhaust steam. There are still 9-11 to be utilized for drying purposes. The exhaust steam from a 75-h. p. engine will heat up 7,000 sq. ft. of heating surface. This is equal to 21,000 running feet of 1-in. pipe.

In using exhaust steam for heating or drying purposes, all piping should be so arranged that the resistance to the movement of the steam is very low. A back pressure of two or three pounds upon such an engine will be allowable. With well-arranged coils and a fan to blow the air through them, air may be heated through the medium of exhaust steam from 50 deg. to 100 or 120 deg., and from 2,500,000 to 3,000,000 cu. ft. of air at that temperature for 24 hours, will carry away all the moisture contained in all the bricks that can be made by a 75-h. p. engine in one day.

The existing difficulty is in getting the heated air properly distributed. An ideal plan is to have three drying sheds, each large enough to accommodate one day's run of bricks; then have the heated air led to each shed, with gates in the pipes so that either of the sheds could be cut off. Have the roofs ventilated and about one-half of the sides of the shed made removable. This leaves one shed being filled with to-day's run of bricks; yesterday's run is in the next shed, with the removable sides all in tight and the bricks drying, while the third shed is open and the bricks are being barrowed to the kiln—this process following on from shed to shed.

The hot-air ducts should be low down and be well protected. They should have frequent openings and each opening should have a slide-gate in it to regulate the amount of air discharged. The fan should be run by a small engine: 8 h. p. would be of ample size. The ducts from the fan to the sheds should be large and have long bends where necessary to change the direction of the ducts. By such means as this, the yard would be almost independent of the weather, and a year's output be increased enough to more than pay interest on the increased investment.

In India, at some of the larger brickyards, they use mechanical drying. They make a duct the full length of the shed, the duct having a wide flat top covered with firebrick slabs. Through this duct, the escaping gases from the boilers pass on the way to the smokestack, which is set a long way off for this purpose and the brick are racked upon this hot flue. The shed roof is well open for the escape of the moist air. This plan does well at times but it is subject to weather and the winds.

In that country, they also utilize the exhaust steam for drying. The plan adopted is to cover the floor of the shed thickly with pipes and over them put a lattice floor upon which the bricks are racked. In these cases, the drying sheds are closed upon the sides and ventilated through the roofs. So you see that even in far-off India where labor is very cheap, the brickmakers are spending money for mechanical drying.

In conclusion, allow me to say that the clayworkers' industry is one of Canada's greatest assets, and that there is nothing too good for the brickmaker or his brickyard.

*Read before the Canadian Clay Products Manufacturers at Toronto Canada, Dec. 24, 1906.

ILLINOIS CLAY WORKERS' INSTITUTE

During the regular session of the Illinois Clay Workers Association in Champaign, January, 1906, a resolution was passed requesting the Department of Ceramics of the University of Illinois to offer a ten-day course of instruction following the regular annual convention of the Association in subjects of general interest to clay workers.

Scope of Instruction offered: Pursuant to the request circular letters were addressed to all the members of the Clay Workers Association asking advice as to what subjects were desired and almost all replied "Drying and Burning." A few also mentioned "Clays and Clay Testing."

The program outlined below was therefore arranged, in which the topics presented and the number of lectures to be given on each are as follows:

1. Kilns, four lectures.
2. Dryers, two lectures.
3. Fuel, three lectures.
4. Heat, two lectures.
5. Clays, three lectures.
6. Burning of Clays, five lectures.

PROGRAM.

Thursday morning, January 24.—Closing session of Illinois Clay Workers' Convention.

KILNS.

Thursday afternoon, 2 o'clock.—Lecture, Periodical Kilns, by W. D. Richardson.

A. Up-Draft Kilns.

1. Scoved Kilns.
2. Kilns with Permanent Walls and Furnaces.

B. Down-Draft Kilns.

1. Round.
 - (a) Center-Stack.
 - (b) Multiple Stack.
 - (c) Outside Stack for One or More Kilns.
 - (d) Under-Fired.
2. Rectangular.
 - (a) Single Stack for One or More Kilns.
 - (b) Multiple Stack.
 - (c) Double Kilns.
 - (d) Up and Down Draft.
 - (e) Under-Fired.

C. Muffle Kilns.

1. Up-draft.
2. Down-Draft.
 - (a) Center Stack.
 - (b) Multiple Stack.
 - (c) Outside Stack for One or More Kilns.

Thursday evening, 7 o'clock.—Lecture, Continuous Kilns, by W. D. Richardson.

A. Open Top—Without Crown.

B. Closed Top—With Crown.

1. Annular or Ring Kiln.
2. Chambered or Compartment Kiln.
 - (a) Fired Through Shafts Among the Ware.
 - (b) One-Side Firing.
 - (c) Two-Side Firing.
 - (d) Semi-Gas Firing.
 - (e) Gas Firing.

Friday morning, 9:30 o'clock.—Lecture, Semi-Continuous Kilns, by W. D. Richardson.

1. Same subtopics as for Continuous Kilns.
2. Advance Heating Systems for Continuous Kilns.

Friday afternoon, 2 P. M.—Lecture, Kiln furnaces, Kiln Stacks, Draft Kiln Construction, Kiln Management and Kiln Records, by W. D. Richardson.

Friday evening, 7:30 o'clock.—Lecture, under auspices of the College of Engineering, Creation of a Manufacturing Plant, being a story of the designing and rebuilding of the plant of the B. F. Sturtevant Manufacturing Company of Boston, Mass., by W. B. Snow, Engineer of the Company.

DRIERS.

Saturday morning, 9:30 o'clock.—Lecture, Drying Prop-

erties of Clays. Natural Laws Involved in Drying, W. D. Richardson.

Saturday afternoon, 2 o'clock.—Lecture.

A. Types of Driers and Adaptability of Each.

1. Natural Driers.
2. Semi-Artificial Drier.
3. Artificial Drier.

B. Drier Construction.

C. Operation of Driers.

D. Cost of Drying.

E. Scumming.

Causes and Remedies of Drier Scum, W. D. Richardson.

HEAT.

Monday morning, January 28, 9:30 o'clock.—Lecture, Elementary Description of Kinds of Heat, Heat Energy and Generation, illustrated by demonstrations, Dr. F. R. Watson.

Monday afternoon, 2 o'clock.—Lecture, Measurement of Heat, illustrated, Dr. F. R. Watson.

FUELS.

Monday evening, 7:30 o'clock.—Lecture, Origin of Coal, Dr. H. Foster Bain.

Tuesday morning, 9:30 o'clock.—Lecture, Composition, Fuel Value and Distribution of Coals of Illinois, Professor S. W. Parr.

Tuesday afternoon, 2 o'clock.—Lecture, Volatile Constituents in Coals and Their Effect on Clay Wares, Professor S. W. Parr.

Tuesday evening, 7:30 o'clock.—Concert, Cello Recital by Karl Griener, under the auspices of School of Music.

CLAYS.

Wednesday morning, 9:30 o'clock.—Lecture, Geological History of Clays, Professor C. W. Rolfe.

Wednesday afternoon, 2 o'clock.—Lecture, Testing of Clays with a View to Determining Their Possible Commercial Uses, Ross C. Purdy.

Wednesday evening, 7:30 o'clock.—Lecture, Economic Classification of Clays, Ross C. Purdy.

CLAY BURNING.

Thursday morning, 9:30 o'clock.—Lecture, Limits of Hardness to Which Clay Wares Should Be Burned, Ross C. Purdy.

Thursday afternoon, 2 o'clock.—Lecture, Effect of Heat upon Structure of Red, Buff and White Burning Clays, Professor A. V. Bleining.

A. Water Smoking.

B. Dehydration.

C. Oxidation.

D. Vitrification.

E. Fusion.

Thursday evening, 7:30 o'clock.—Lecture, Colorations Produced by Heat and Flame, Professor A. V. Bleining.

A. Body Colors Under Oxydizing and Reducing Conditions.

1. Coloring effect of iron naturally contained in clay.
2. Artificial additions of iron oxide.
3. Effect of the joint presence of iron and lime.
4. Color effect of carbon.
5. Color changes caused by sulphur.
6. Color due to manganese.
7. Colors produced by the addition of some other metallic oxides to white burning clays.

Friday morning, 9:30 o'clock.—Lecture, Surface Colors, Under Oxydizing and Reducing Conditions, Professor A. V. Bleining.

A. Flashing.

B. Blue Smoking.

C. Salt Glazing.

Friday afternoon, 2:30 o'clock.—Lecture, Burning of Finer Wares in Down-Draft Kilns, Arthur C. Watts.

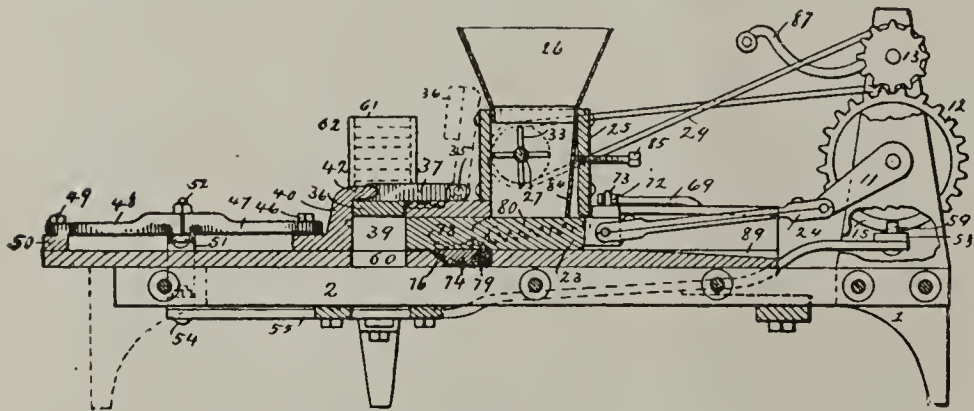
Friday evening, 7:30 o'clock.—Social Gathering in the Laboratories of the Ceramic Department.

NEW INVENTIONS THAT ARE OF INTEREST TO THE CLAY MANUFACTURER

These new inventions are those that are especially of interest to anyone engaged in the line of building materials and their manufacture, or machinery to make them:

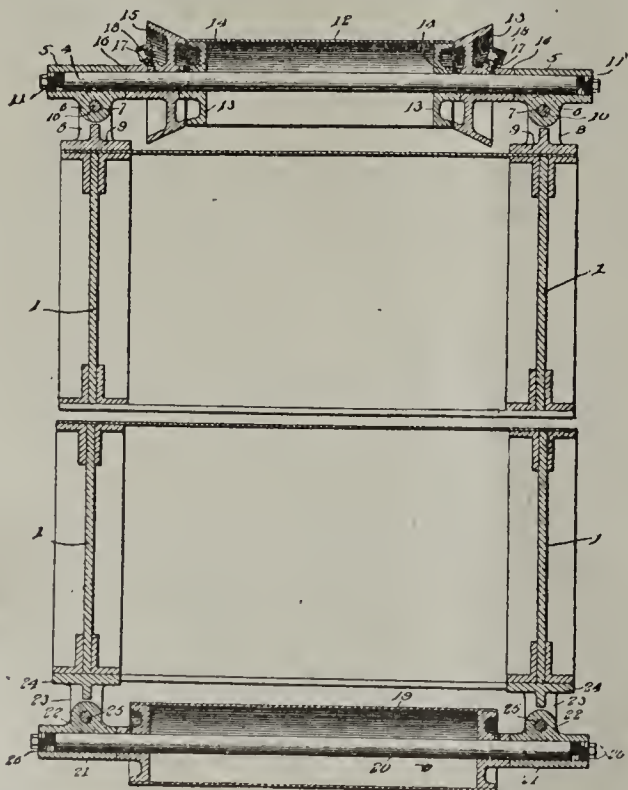
837,938. Automatic Cement-Brick Machine. Benjamin W. Leggett, Eaton Rapids, Mich. Filed May 29, 1906. Serial No. 319,315.

Claim—A block-forming machine comprising an inclosed runway, a mold at one end of said runway and communicating therewith, a delivery-chute communicating with said runway and adapted to feed material thereto, a plunger having movement in said runway and adapted to control communication between said chute and said runway, and means interposed in said runway between its points of communication with said chute and said mold for regulating the amount of material admitted to said runway from said chute.



A block-forming machine comprising an inclosed runway, a mold at one end of said runway and communicating therewith, a delivery-chute communicating with said runway and adapted to feed material thereto, a moveable gate disposed adjacent to the point of communication, a plunger having movement in said runway and designed to force material into said mold, said plunger serving to interrupt communication of said chute with said runway upon its forward movement and to establish communication therebetween upon its rearward movement and means for opening and closing said gate with respect to said runway upon the forward and rearward movement of said plunger.

838,119. Conveyor. George W. King, Marion, Ohio, assignor to The Marion Steam Shovel Company, Marion, Ohio, a Corporation of Ohio. Filed June 3, 1905.

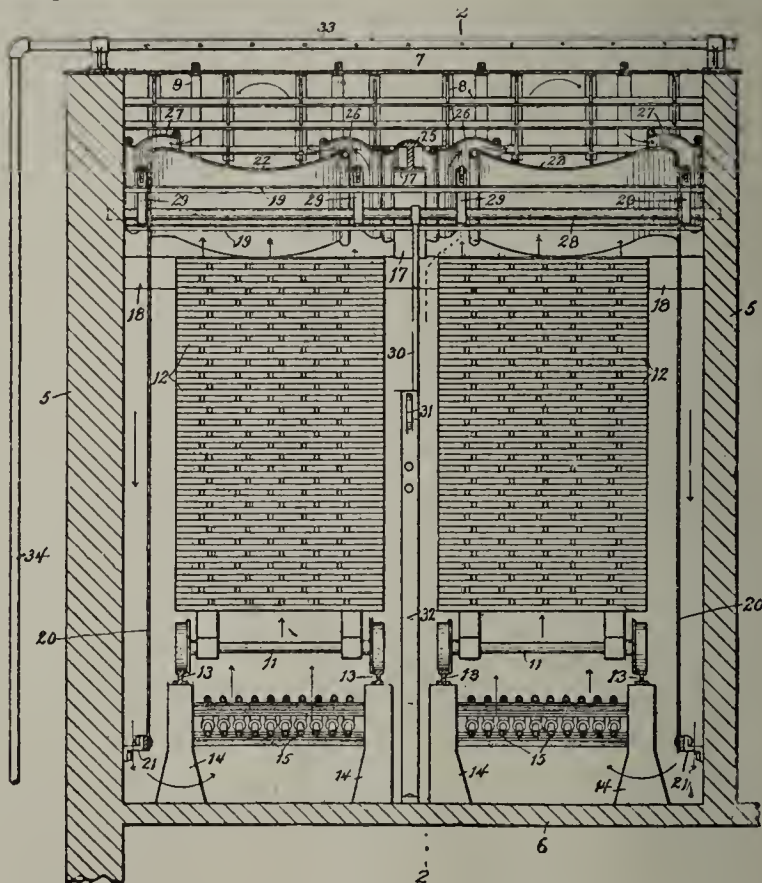


Claim—In a belt conveyor of the character described the combination, with a stacker-frame, of belt-supporting rollers, rotating shafts on which said rollers are mounted, and end-supporting bearings for said shafts, each bearing

comprising a bearing-sleeve to receive the shafts and a base or bracket secured to the frame, said sleeve and base being connected by a pivot transverse to the shaft, substantially as described.

838,227. Dry-Kiln. Arthur White, Sheboygan Falls, Wis. Filed Mar. 26, 1906. Serial No. 308,016.

Claim—In a dry-kiln, a drying-chamber, a roof covering the drying-chamber comprising a network of T-rails extending across each other with their flanges interlocked, and sheet-metal covering supported by the framework, there being passage-ways leading to and from the roof through which the moisture-laden air from the drying-chamber may pass to produce condensation of the moisture.



In a dry-kiln, walls inclosing a drying-chamber, partitions spaced from opposite side walls to form return-passages, inclined covers for the drying-chamber connecting with the partitions and terminating at a distance from each other, ledges on the front and rear walls at different elevations, a beam supported on the ledges and lying in the space between the edges of the covers, hinged flaps carried by the beam and adapted to close the space between the covers, hinged flaps adapted to close the return-passages, a roof forming a condensing-surface above the covers, a rock-shaft journaled across the drying-chamber, means carried by the rock-shaft and bearing on the flaps, a crank-arm connected with the rock-shaft, a handle-rod connected with the crank-rod, a support for the handle-rod, and teeth carried by the handle-rod for locking the rod in its adjustments by engaging the support whereby the flaps may be held more or less open for the circulation of air for condensation.

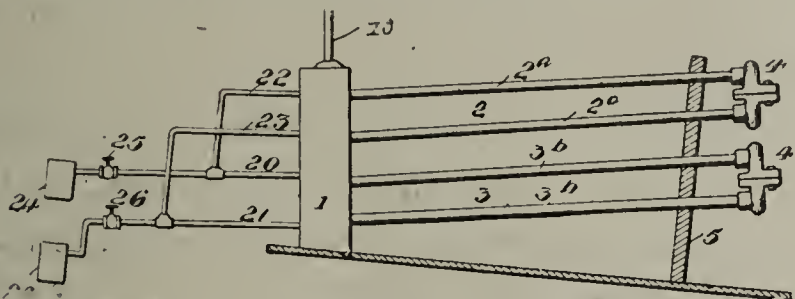
838,496. Manufacture of Glazed or Enameled Ceramic Ware. Alexander Bigot, Paris, France. Filed Feb. 17, 1903. Serial No. 143,858.

Claim—The improved process of making articles of pottery consisting in superposing in a mold layers of ceramic material in a slightly-damp powdered condition and of an enameling or glazing material, applying pressure to impart to the materials the shape of the mold, and then immediately firing the molded article without preliminary drying.

The improved process of making articles of pottery consisting in superposing in a mold layers of ceramic material in a slightly-damp powdered condition, a glazing or enameling material and an interposed layer of coloring material, applying pressure to impart to the materials the shape of the mold, and then immediately firing the molded article without preliminary drying.

838,427. Kiln-Heating Apparatus. Samuel O. Larkins, Roland Park, Md. Filed Mar. 30, 1906. Serial No. 308,864.

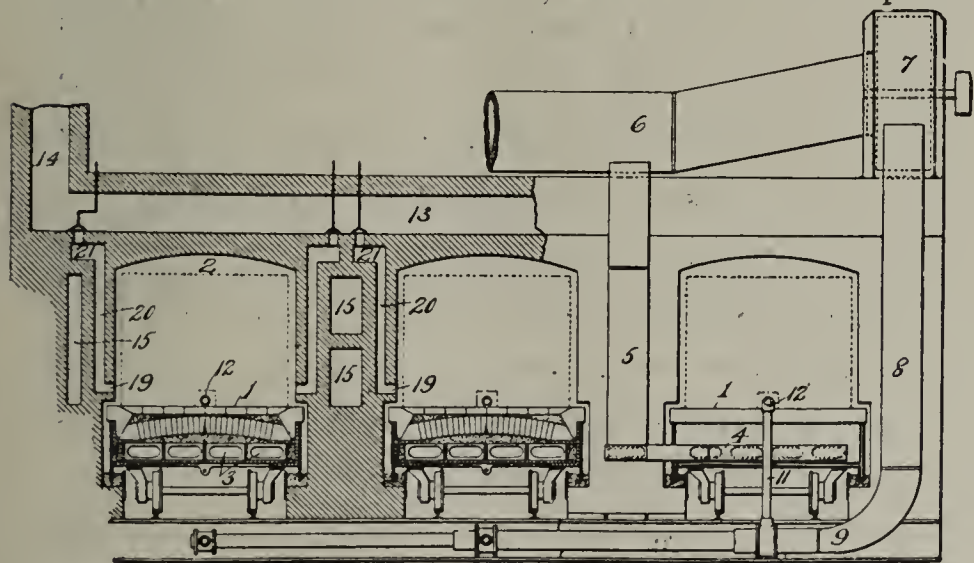
Claim—A heating apparatus comprising a header constructed with inner division-walls forming separated series of vertically-arranged communicating chambers, the chambers of one series being located between similar chambers of a separate series, drain-pipes with cut-off valves leading from the several chambers in the header, steam-conveying pipes leading into the respective series of header-chambers, cut-off valves in said steam-conveying pipes, and heater-pipes providing communication for a chamber in one series thereof into a lower chamber of a separate series of chambers, the heater-pipes being arranged upwardly inclining from their connection with the header.



A heating apparatus comprising a header constructed with inner division-walls forming separated series of vertically-arranged communicating chambers, the chambers of one series being located between similar chambers of a separate series, drain-pipes with cut-off valves leading from the several chambers in the header, the chambers being constructed with inner bottoms, made downwardly inclining to centrally-located discharge-openings, providing passage-ways into the drain-pipes, steam-conveying pipes leading into the respective series of header-chambers, cut-off valves in said steam-conveying pipes, and heater-pipes providing open communication from a chamber in one series thereof to a lower chamber in a separate series of chambers, the heater-pipes being arranged upwardly inclining from their connection with the header.

839,833. Manufacturing Brick. Albert A. Gery, Reading, Pa. Filed May 19, 1905. Serial No. 261,104.

Claim—A tunnel-kiln having an end section thereof separated from the main kiln by a movable partition, and provided with an end closure to form a cut-off chamber, a periodically-progressing brick-carrying floor made up of abutting floor-sections, means for admitting heated air under pressure to the lower portion of said chamber midway of its width, and restricted low-down outlets therefor through each side wall of said chamber, whereby a central upward



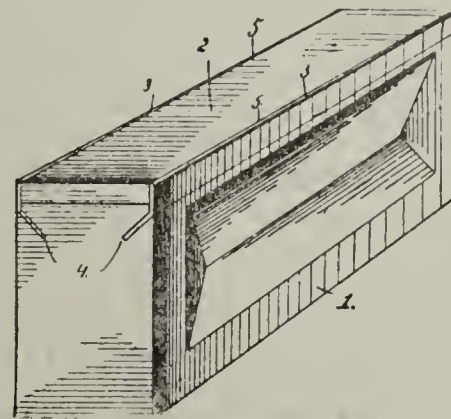
flow of the incoming air and lateral downward flow of stored air is maintained in said chamber, substantially as set forth.

A tunnel-kiln having an end section thereof separated from the main kiln by a movable partition, and provided with an end closure to form a cut-off chamber, a periodically-progressing brick-carrying floor made up of abutting floor-sections, means for forcing heated air into said cham-

ber to compress the same therein, and adjustable means for discharging the air from the lower portion of said chamber whereby a downward circulation of compressed air is maintained in said chamber substantially as set forth.

839,792. Brick. Samuel Veyon, East Palestine, Ohio. Filed July 10, 1906. Serial No. 325,464.

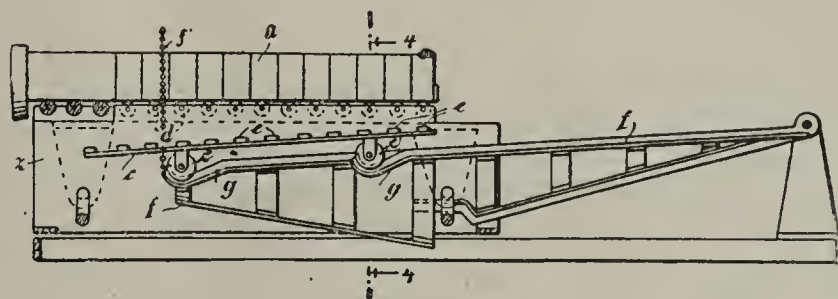
Claim—A brick having a facing of vitreous material, in combination with metallic fasteners, embedded in the body of the brick and having projecting plates overlapping the opposite edges of the facing.



An ornamental brick comprising a body portion consisting of a composition of cement and a refuse pottery material known as "bisque," and a facing of opaque glass cemented upon the outer face of the brick, in combination with oppositely-disposed metallic fasteners embedded in the body of the brick and having projecting edge plates overlapping opposite edges of the facing.

839,587. Conveying Device for All Kinds of Unburnt Bricks Produced in the Molding-Press. Friedrich Herrmann, Glatz, Germany. Filed Sept. 4, 1906. Serial No. 333,128.

Claim—A machine for conveying and separating unburnt bricks, which comprises a conveyer adapted to move adjacent the lower face of a brick-cutting table, and provided with brick-engaging means, and means for varying the height of the brick-engaging means of the conveyer whereby the bricks are individually engaged and removed thereby and separated.



A machine for conveying and separating unburnt bricks comprising a vertically-adjustable conveyer adapted to move adjacent the lower face of a brick-cutting table and means for varying the height of the bearing-surface of the conveyer whereby the bricks are removed and separated.

839,962. Brick-Mold. Hiram Routt, Dallas Center, Iowa. Filed July 2, 1906. Serial No. 324,327.

Claim—In a brick-mold the combination of a skeleton frame having a plurality of plates extending upwardly from



support-shafts; a base portion having one longitudinal side rigidly secured to a base; a plurality of transverse slots in said base designed to engage the plates on the skeleton portion; orifices in said base; a second longitudinal side loosely secured to said slotted base by means of lugs engaging the orifices in the said slotted base; screw-threaded crank-shafts connecting said longitudinal sides all arranged and combined substantially as and for the purposes stated.

CLAY RECORD.

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JANUARY 15, 1907.

No. 1

"I like to read American advertisements. They are in themselves literature, and I can gauge the prosperity of the country by their very appearance."—William E. Gladstone.

When times are dull and people are not advertising is the very time that advertising should be the heaviest. Ninety-nine out of every hundred merchants advertise most when there is least need of it, instead of looking upon advertising as the panacea for their business ills.—John Wanamaker.

CONVENTIONS

The Twenty-ninth annual convention of the Illinois Clay Workers Association will be held at Champaign, January 22-23-24, 1907.

The Twenty-first annual convention of the National Brick Manufacturers' Association will be held at St. Louis Mo., February 4th to 16th, 1907. Sessions will be held Wednesday, Thursday and Friday, 6th, 7th and 8th; the balance of the time will be devoted to visiting clay plants.

The Ninth annual convention of the American Ceramic Society will be held at St. Louis, Mo., February 4-5, 1907.

The Second annual convention of the National Paving Brick Manufacturers' association will be held at St. Louis Mo., & February 4, 5, 6, 1907.

The Seventh annual convention of the Wisconsin Clay Workers' association will be held at Madison February 27, 28 and March 1, 1907.

It's better to believe all you see than one-half you hear.

Better swallow your indignation when you thirst for revenge.

The under dog gets a lot of sympathy, but the upper canine collars most of the gate receipts.

Beware of the man who never misses an opportunity to say that there isn't money enough in circulation to buy him. Sooner or later you will find him on the bargain counter.

Don't howl if occasionally you get it in the neck: be thankful that you are not a giraffe.

What a lot of wise men there would be in the world if every man knew half as much as he tries to make others think he knows.

When you are making out your list of magazines you wish for 1907 do not miss the CLAY RECORD. It comes to you twice a month, the only clay journal in America that does this. If you can not get the value of the subscription (one dollar per year) out of it we will cheerfully refund your money.

Official reports, from some fifty leading cities throughout the United States, showing the building transactions of the past year, as compared with those of 1905, are herewith presented. The results will prove in the nature of a surprise to many people and do much towards reassuring those who had come to look upon our remarkable building prosperity as a thing of the past, and prepared themselves for a substantial decline during the present year. The total building transactions in the cities tabulated, for the year 1906, were \$591,283,571, a gain of \$13,077,622 over those of 1905, which stood at \$578,258,949. Figured on a percentage basis, this amounts to a gain of something more than two per cent.

This result is all the more gratifying because it was not anticipated except by those that had kept a close tab on the building operations of the various cities, and few of that class, before formulating and figuring the reports, expected a balance on the credit side of the building ledger. The result clearly demonstrates that the building movement is still with us, and that undiminished. That prosperity in building lines is as broad as the country is shown by the accompanying table. There have been losses, it is true, but they are widely distributed and evidently depend upon local conditions, which argue little or nothing against future prospects. The loss in New York, where the operations of 1905 were exceptionally large, amounted to nearly 25 millions, yet this was offset with more than 13 millions in addition in other cities.

Taken in its entirety, this showing is of a most favorable character, demonstrating, as it does, that the great building industry is moving steadily forward, and that on solid business lines, rather than in response to the fitful and uncertain demands of speculation. The present year promises to equ or not surpass the one just brought to a close.

OBITUARY

Mrs. William Bieber, wife of the veteran brick manufacturer at Kutztown, Pa., died at her home of pneumonia.

Solomon Rosenbaum, vice president and general manager of the Powhatan Clay Mfg. Co., died at his home, 405 Hancock street, Brooklyn, N. Y. He was 61 years old. He leaves a widow and six children.

Lewis Kirkover, one of the oldest residents of Buffalo, N. Y., died at his home, 265 Franklin street. He was 81 years of age and lived in Buffalo 70 years. He spent almost his entire life in brickmaking, retiring a few years ago.

Ralph I. Gates, one of Chicago's pioneer citizens, and treasurer of the Chicago Portland Cement Co., died at his home, 4457 Ellis avenue. He was 67 years old and one of the founders of the Gates Iron Works.

FIRES, ACCIDENTS, DAMAGES AND LOSSES

The Metropolis (Ills.) Pottery Co. has filed a petition in bankruptcy. The liabilities are \$8,500.

Robert Trafton, an employe of the San Antonio (Texas) Sewer Pipe Co., had two ribs and his collar bone broken by a piece of falling timber.

The Kankakee (Ills.) Tile & Brick Co. has been sued for \$10,000 damages by the estate of Frank Seroy for the explosion of the heater which killed him.

The Scott Pottery, Front and Carr streets, Cincinnati, O., was broken into, and the brass mountings from the engine, the printing press, pottery, and furniture were stolen.

The plant of the B. K. Enameled Brick Co., Leavittsburg, Ohio, has been appraised at \$19,000 and will be sold the 19th to satisfy claims made by John B. Brooks, a stockholder.

Boys entered the plant of the Lehigh Granite Brick Co., at Allentown, Pa., and completely plundered all the machinery for its brass fittings. The plant is in the hands of a receiver.

The damage case of the Chicago Hydraulic Press Brick Co., whose plant at Porter, Ind., was destroyed by fire, has been set for trial for this week. They are suing the Lake Shore Railway for \$78,000 damages.

Alleging that because of the changing of pulleys on a brick pressing machine, his minor son's hand was badly crushed, R. D. Cooley has commenced suit for \$1,000 damages against C. W. Ritz of Sergeant Bluffs, Iowa.

Jacob Grau, a boy, 15 years of age, was badly hurt by being whirled around a shaft at the Maddock Pottery Co. plant, Trenton, N. J. The boy invaded the grinding room, against the rules of the company, to help a girl do some grinding of tools.

WILL SOON BUILD THEIR PLANT

The Federal Brick Company, Columbus, O., recently organized, of which W. O. Taylor, general manager of the Casparis Stone Company, is president, has plans for the big brick plant which it will erect in the Hocking Valley almost completed and it will not be long until construction of the new plant is begun. New brick plants now in course of erection or planned will more than double the brick output of the Hocking Valley the coming year.

1907 CALENDARS RECEIVED BY CLAY RECORD

The C. K. Williams & Co., Easton, Pa., have forwarded their usual calendar which is very complete, showing in half-tones the four mills where the dry colors, paint oxides, clays and various dry minerals are ground and prepared.

The Roessler & Hasslacher Chemical Co., 100 Williams street, New York, as usual are showing exquisite taste in their calendars which are issued by the ceramic department.

A. M. and W. H. Wiles Co., Grassy Point, N. Y., always choose something beautiful for a calendar. This time ours is a painting "A Virginia Mill at Evening." It almost makes one feel as though they were there enjoying the sound of the water rushing over the old wheel.

This year the E. M. Freese & Co., of Galion, Ohio, has outdone all former years, although before their calendars were always good. The one received by the Clay Record is "The Signal," an Indian standing high on a rocky cliff giving the signal to those in the valley. It is embossed and very beautifully colored.

1907 OFFICERS OF THE CANADIAN CLAY PRODUCTS MANUFACTURERS

The following were elected officers of the Canadian Clay Products Manufacturers at the meeting recently held in Toronto, Ontario:

President, J. B. Miller, Toronto.

First Vice President, J. S. McConnell, Milton.

Second Vice President, Charles Curtis, Peterboro.

Third Vice President, J. Cornhill, Thedford.

Secretary and Treasurer, C. H. Bechtel, Waterloo.

The executive committee elected was M. Martin, Thamesville; Wm. Pears, Toronto; Hon. S. J. Fox, Lindsay; M. Mulligan, Ottawa; Wm. McCredie, Lyons; Joseph Russell, Toronto; H. de Joannis, Chicago, Ill., and D. A. Lochrie, Toronto.

In voting for the next meeting place Ottawa, the capital of the Dominion of Canada, was victorious by ten votes. Canada, like several of the States of the United States, is trying hard for a Ceramic School for Canadian clay workers, and there is no doubt but what one will be granted to them before very long.

DOW BRICK COMPANY INCORPORATED TO OPERATE BRICK PLANT

A lease has been filed from Maxwell P. Innis to the Dow Brick company, Columbus, O., of a tract of land containing 10 acres in Clinton township for a period of 10 years to be used by the brick company to secure its shale clay. Another lease from Ada R. Williams to the same company for five years from March 1, 1905, gives the use of a farm of 100 acres for the yard proper. The two sites are located on Seventeenth avenue east of the state fair grounds. The first lease has as its consideration a royalty of 15 cents a thousand and the second lease 25 cents a thousand and \$3,000, payable \$125 quarterly.

The Dow Brick company was incorporated last month with a capital of \$40,000 to take over the partnership of E. W. Dow & Co. Daniel W. McGrath is president; E. W. Dow, vice president and superintendent, and John A. McDowell, secretary and treasurer.

IOWA CLAY WORKERS ASK LEGISLATURE FOR MONEY TO EQUIP A CERAMIC SCHOOL

Sioux City, Iowa, Jan. 11.—With the election of officers for the ensuing year and passage of resolutions asking for the legislature to appropriate \$10,000 for the equipment, and \$2,500 annually for the maintenance of a school of ceramics at the state college at Ames, the twenty-seventh annual convention of the Iowa Brick and Tile Manufacturers' Association closed at noon yesterday in the ordinary of the Mondamin hotel. The following officers were chosen:

President—William H. Brecht, of Des Moines.

Vice-President—G. W. Fairchild, Sioux City.

Secretary—C. B. Platt, Van Meter.

Treasurer—F. A. Stephenson, Mason City.

Although the selection of the next convention city is left to the executive committee, it is understood Boone will secure it. During the Sioux City session there have been more than seventy-five brick and tile manufacturers in attendance.

At the morning session four papers were read and discussed, as follows: "Discounts, Breakage and Allowance," by C. B. Platt, Van Meter; "The Systematization of Office Work," by C. F. Green, Sioux City; "Is Producer Gas a Possible Factor in Clay Working Operations?" by C. L. Smith, Mason City; "Care of Power Plant," by C. W. Ritz, Sioux City.

Among the other resolutions passed was one continuing the legislative committee of the association in its effort to secure legislation favorable to the development of the clay industry in Iowa.

WISCONSIN ROADS PROMISE NEW RATE SCHEDULE ON BRICK

Manitowoc, Wis., Jan. 12.—Railroads of the state have promised a new schedule of freight rates on brick to G. W. Kennedy and a committee of which he is head, representing the Wisconsin Clay Workers association. Mr. Kennedy and his committee conferred with representatives of all leading roads of the state at Madison yesterday and granted a ten-day respite to the companies to prepare a new schedule which will be passed upon by the committee. In event that this schedule is not satisfactory, another conference will be held before the complaint is pressed before the state rate commission. Mr. Kennedy declares that the roads admitted that the present rate on brick favored Chicago manufacturers over Wisconsin brick makers.

BRICK COMPANY FINDS FINE DEPOSIT OF COAL

The Industrial Brick Works, Boonville, Ind., which operates in the edge of the city, has, since last fall when they accidentally discovered that a vein of good coal had been stripped in removing clay for the making of brick, mined nearly \$1,000 worth of coal. The vein is about five feet in thickness, and a block of this vein thirty by one hundred feet has been sold and delivered over Boonville for the above amount. The owners of the brick plant are elated over their find, for the coal which can be mined at little cost after the clay has been removed.

INDIANA DRAIN TILE MANUFACTURERS HOLD CLOSED DOOR MEETING

Forty members of the Indiana Drain Tile Manufacturers' Association held a meeting at the Grand Hotel, Indianapolis, Jan. 10, presumably in connection with legislation that may come before the present General Assembly. The meeting was behind closed doors, and when a member was asked the purpose of the meeting he denied that a meeting was in progress, and said that only a few of the members had "happened to get together."

KANSAS BRICK PLANTS MONTHS BEHIND IN FILLING ORDERS AND THE DEMAND INCREASING

The perfection for modern brick making is found in the gas belt of Kansas as far as material and cheap fuel are concerned, for here is incalculable wealth stored in the earth, where we are insured an inexhaustible supply.

For the past 100 years the destruction of forests has been great, and within the last ten years lumber has nearly doubled in value. This has made people use other material in building, and caused a constantly increasing demand for brick. There is an increasing demand also for a fire-proof building material and better buildings. Another cause of the increasing demand is that the little cities of 2,000 to 5,000 people are just beginning to pave their streets, and as they will continue to grow the demand will increase. A brick is good until sold and the demand through all history has always been beyond the supply.

The last report from the department of the interior, Washington, D. C., on the clay industries of the United States, gives the average price of brick at the factory for the whole country to be \$5.77 for commons, \$9.31 for paving and \$11.60 per 1,000 for pressed front brick. At these prices the demand has never been filled. With the increasing natural progress of the country it is not likely that prices will be less for generations to come.

Experience has proven that shale has no equal in the production of an enduring paving brick at reasonable cost, and for building purposes the great city fires demonstrated that granite and all kinds of building stone could not withstand such heat, while shale brick came out practically uninjured. For the manufacture of common building brick, pressed brick or vitrified brick, no clay ever found is equal to a pure deposit of shale.

Where Kansas brick companies own their material and gas wells, the cost of fuel is so small that brick can be made much cheaper than with other fuel and the profits are that much larger. For this reason there is no better investment today than in brick making in the Kansas gas belt with good business management. Some may think that with many brick plants in the gas regions the market may become fully supplied and cause prices to fall and profits small, but they need have no such fear, for good locations convenient to a railroad are nearly all taken, and the market is unlimited. There is not a brick plant in the gas belt today with good machinery making good brick that is not always behind in filling orders, such is the demand. In investing in a brick company owning material and gas, and under good management, the only question is the size of the dividends.

POTTERY BUSINESS FOR 1907 OPENS WITH MOST ENCOURAGING PROSPECTS

Judging from the number of orders placed by pottery buyers since the first of the year the outlook for 1907 is most promising. It is said more buyers have been in East Liverpool, O., within the past two weeks than in any like period in the history of the industry, and that none have departed empty-handed.

A gratifying feature of the present revival of trade is that no complaint has been made of the new price list put in effect by the United States Potters' association. All sample rooms are better equipped and contain a greater variety than ever before, which may account, in a measure, for the liberal patronage enjoyed.

WILL HAVE TO MOVE.

More room necessary. On account of the phenomenal growth and development of the business of the "Ideal" Concrete Machinery Company of South Bend, Indiana, they have found it necessary to vacate their present factory building, and have leased the plant formerly occupied by the Bissel Plow Company, which will give them three times their present floor space, and other facilities which will materially assist in promptly taking care of the ever increasing demand for "Ideal" Concrete Machines. We hear a good deal in these days of rapid business development, but we think that the "Ideal" people are holding their own with any of them.

THE DANVILLE BRICK PLANT IS SOON TO BE ENLARGED FOLLOWING REORGANIZATION

The Danville Brick company, operating the old Shea brick yards overlooking the Vermilion river west of Danville, Ill., will be reorganized, the capital stock increased and the plant enlarged within a short time. New machinery is to be installed, several more kilns constructed and the plant placed in shape to compete with the larger concerns operating in the country.

This statement was made at a time when deeds conveying to Ralph B. Holmes, from Harvey C. Adams, 31 lots in different sections of the city were filed with the recorder. Mr. Holmes retires from the directorate of the company, turning his stock over to Mr. Adams, the property being in part payment for the same. Mr. Adams will in turn dispose of the stock to Col. W. P. Whitney, late secretary of the Wabash Clay company, of Veedersburg, Ind. Mr. Whitney is well versed in the clay industry, a practical brick man and under his direction the plant here will be enlarged and will manufacture brick similar in shape, size and weight to the brick which have made the Fountain country, Ind., village known throughout the country wherever brick are used by the building trades.

It is not yet known when the plant will be enlarged, but the plans are already being made and it is expected that work will begin as soon as the weather will permit. The brick yard is situated close to a very large deposit of fine shale and this can be brought to the factory with but little trouble. It is expected when the plant is in operation that brick can be made much cheaper than at any factory in this vicinity.

AYER-McCAREL CLAY CO., TO BE KNOWN AS HYDRAULIC PRESSED BRICK CO.

Brazil, Ind., Jan. 10.—(Special)—The name of the Ayer-McCarel Clay company has been changed. The Hydraulic Pressed Brick company of St. Louis purchased the plant here about a year ago, but has just decided to change the name of the plant here to the Hydraulic Pressed Brick Company, that being the name under which the other twenty-seven plants belonging to the company are being operated.

Since the company purchased the Ayer-McCarel plant it has enlarged it and now the capacity is 20,000,000 finished face brick per year. The value of the output of the Brazil plant will be about \$600,000 per annum. H. A. Walters is general manager of the local plant, and H. I. Ireland has been appointed assistant secretary.

RECENT CONTRACTS BY THE BUFFALO FORGE COMPANY.

MECHANICAL DRAFT (INDUCED).

E. B. Hotchkins & Co., Brussels:

2-130" dia. 140" width S. P. Fans—full hag. 1 rt. hand, 1 lft. hand discharge. Overhung blast wheels, water cooled bearings.

Paris Gas & Electric Co., Paris, Ill.

1-140" dia. 120" wide full hag., left hand angular up discharge, overhung wheels and water cooled hangers. Direct connected to horizontal 8x8 S. C. engine left hand, run on speed 225 R. P. M. 1/2 Foster Speed Regulating Valve.

Hoosic Falls Illuminating Co., Hoosic Falls, N. Y.

1-110" S. P. Fan 3/4 hag., overhung wheel, water cooled bearings, extended subbase for 8x8 S. V. engine, 11 1/2" Cash Press. Reg Valve.

EXHAUSTERS.

12-60" special full hag., overhung wheels and bearing stands, to Ruggles Coles Engineering Company for use with rotary cement dryers.

3-70" standard full housing—pulley fan, water cooled bearings, to Iroquois Cement Co., Caledonia, N. Y.

3 Dust separators with inlet 26" in diameter and all galvanized iron work for use with rotary cement dryers.

MISCELLANEOUS.

1-40" pulley, Merchants Freezing & Cold Storage Co., Providence, R. I. Ventilating.

1-8,000 A. P. Mand 1-3,000 A. P. M. for G. E. C. for Cooling Transformers.

1-50" No. 4 B Volume Blower for McDermott Bros., Allerton, Pa., for drying.

HEATING EQUIPMENT.

Capron Knitting Co., Utica, N. Y.

Ontario Knitting Co., Oswego, N. Y.

Urbaner Alwood Heating Co., Enid, Okla., used in Enid Theater Electric Fan.

Wollen & Cotton, Indianapolis, Ind. Electric Fans.

J. T. S. Brown & Sons, McBrayer, Ky., 120" steam Fan driven by direct connected 8x8 Hor. S. C. engine with heater, receiver, pressure regulator pumps, etc., for ventilating Whiskey Warehouse.

Utah Copper Co., Garfield Plant, Garfield, Utah.

2-160" full housing pulley fans, pulleys 54" in diameter.

SAND OR LIME BRICK OR BLOCK NEWS

Bridgeton, N. J., capitalists are interested in the forming of a sand-lime brick company at that place and propose to erect a large factory in the spring.

A. S. Hawley, of Baraboo, Wis., has begun the manufacture of cement brick.

John Moren of Lowell, N. Y., has installed a machine for making cement brick, making 1,200 per day with two men. He can furnish any shade desired.

The American Sand Lime Brick company, 77 Jackson boulevard, Chicago, Ill., have a new announcement to the public in their advertisement in the front pages of the Clay Record.

The Menominee (Mich.) Sand Lime Brick company will build a new brick shed large enough to hold several million brick. This company made nearly 20 per cent. during 1906 on its capital stock.

The American Process Company, 62 Williams street, New York, are having all kinds of success drying sand direct from the bank. Write for catalogue W. C. if you want information on this subject.

The International Brick Machinery Co., recently incorporated, has its offices in the Phelps Bank building at Binghamton, N. Y. G. C. Bayless is the president, A. J. Parsons is vice-president, and F. J. Bayless secretary and treasurer.

At a meeting of the stockholders of the Granite Sand Lime Brick Co., Columbus, Ohio, O. P. Lenox was elected president, Ernest Beach, vice president, W. J. Curry, treasurer, and J. E. Robinson, secretary. The business for 1906 was reported as very satisfactory.

The Gem City Concrete company, Dayton, Ohio, has authorized the secretary of the state to increase its capital stock to \$115,000. The company will at once enlarge its plant for the manufacture of brick, and will also make all kinds of concrete blocks and roofing tile.

The Marquette (Kansas) Salt and Brick company has been incorporated with \$25,000 capital stock. The work on a shaft will be started at once. The brick plant will have a daily capacity of 10,000 pressed brick made from sand and lime. The salt plant will crush 30 barrels per day.

At the Taterstall exhibit room of the Cement Users association there were eleven exhibits of cement brick machinery all working full-sized models, two exhibits of cement tile and sewer pipe machinery, and five exhibits of cement roofing tile machinery. Practical demonstrations were made every few moments on each of these machines.

The Sand Lime Brick plant at Waltonville, Pa., which burned to the ground a few days after it was put into operation, about a year ago, is nearing completion. Two of the Boyd Presses are used to make the brick, and the system used is the Huennekes, which is now owned by the Standard Brick Machinery Co., 114 Liberty street, New York.

At the recent convention of the Cement Products Manufacturers they used the Taterstall building as an exhibit room. This building is nearly four acres in extent, and every nitch and corner was filled with cement block and brick machinery exhibits. The most prominent ones being those of the Ideal Concrete Machinery Co., of South Bend, and the Pettyjohn company of Terre Haute.

MISCELLANEOUS ITEMS

Delta, Iowa, is figuring on the establishment of a brick or tile factory.

Laurence Hochgesang, Jasper, Ind., will conduct a brickyard on Paoli road next season.

William Swanton, of Detroit, Mich., will open up his brick yard at Frankenmuth in the spring.

E. S. Shearer, Cullom, Ills., is looking up a location to start a tile factory. He is an experienced tile maker.

The new Tile factory at Summitville, Ind., is gradually nearing completion, and will be running at full capacity, working 200 hands in the spring.

W. F. Emmond, of Rockland, Mich., has closed a contract with Ohio and Illinois parties for the delivery of 1,500 tons of Kaolin to be mined by him on the Ontonagon river.

The C. Solfisburg Sons' Brick Works, Aurora, Ill., are undergoing improvements that will admit of their making 30,000 brick daily. A new steam dryer is being added.

William Giesler has purchased of Laurence Hochgesang the one-half interest in the brick yard on Troy road at Jasper, Ind., and the new firm will be Giesler & Hochgesang.

The Georgia Brick Co., Adairsville, Ga., has just been organized and the necessary stock subscribed. An up-to-date plant and site purchased. Buildings will be started at once.

The Pella (Iowa) Drain Tile & Brick Co. has filed articles of incorporation with \$20,000 capital stock. Directors are W. Rietveld, L. P. Grundman, Jessie Grundman and O. L. Rietveld.

The American Meerscham Co., organized by New York capitalists, has been started to develop clay in Grant county, near Albuquerque, N. Mex. M. W. Boye is president of the company.

Gottlieb Hartweg, of Campbell county, Ky., recently purchased fifty-five acres of land adjoining the Latonia race track and will build sixty houses on same, besides a brick plant similar to the one owned by F. W. Spinks.

The Reliance Coal Mining Co., whose plant is about seventy miles west of Medicine Hat, Alta, Canada, has discovered a 17-foot bed of fine fire clay which is just above a four-foot seam of coal which the company is mining.

W. J. Springborn, director of public service at Cleveland, Ohio, thinks there will be an 8 cent a brick combine among the contractors bidding on paving jobs for next season. Bids recently opened show a uniform increase of 10 per cent. over last year.

The Perth Amboy (N. J.) Tile & Ceramic Co., has been incorporated with \$100,000 capital stock, to manufacture tile, terra cotta and other clay products. Incorporators: I. C. Ostergaard, L. Hansen, W. Jansen, and N. A. Nielsen, of Perth Amboy, N. J.

The Manhattan Brick Co., 15 Exchange Place, Jersey City, N. J., has been incorporated to manufacture brick, tile and clay products. Capital stock, \$15,000. Incorporators are H. O. Coughlan, B. S. Mantz and John R. Turner, all of the above address.

E. A. Joseph is preparing to start a new brick yard at the Lacy coal mine at Underwood, N. Dak.

The Atlantic Terra Cotta Co., whose plant is at Tottenville, L. I., N. Y., distributed nearly \$6,000 in Christmas gifts to its employes.

The American Manufacturing Co., Atlanta, Ga., are in the market for a small size brickmaking outfit perhaps 30,000 brick per day.

The Hecla Portland Cement Co., Bay City, Mich., will increase the capacity of their plant from 1,300 to 1,800 barrels per day by making a large addition to the kiln department.

The Columbus (O.) Brick & Terra Cotta Co., have added two kilns to their plant having 300,000 capacity, and will contract for other kilns within a few weeks. Joe Stroupe had the contract.

The Illinois Manufacturing Co., Macomb, Ills., has expended \$30,000 on improvements to its two sewer pipe plants. Machinery will also be put in to make 42-inch sewer pipe. John Millsom is the manager of the two plants.

W. P. Hammon, of Oroville, Cal., has bought the Alta Lime and Brick Co.'s plant at Morley, and will establish an immense cement factory there. He also owns a limestone quarry there, and will invest a million dollars in the enterprise.

The Brooks Brick Co., Brewer, Me., has been incorporated with \$30,000 capital stock. The president is G. B. Tibbitts of Orrington, and the treasurer and clerk, J. E. Littlefield of Brewer, Maine. Harrison N. Brooks is the general manager.

Satisfactory tests have been made from Taopi (Minn.) clay and there is talk of the establishing of a large manufactory at that place.

The Manteno (Ills.) Brick & Tile Co., of which John Hatch, formerly of Chicago, is the superintendent, began work on the 7th, making 200,000 brick per day.

At the annual meeting of the Rexford Flats (N. Y.) Brick Co., O. B. Knowlton was elected president, LeGrand Rexford, treasurer, and W. A. Graves, secretary.

The Claude Brown Co., Hendersonville, N. C., has purchased clay lands from W. H. Hodges of Greenville, S. C., and will build a brick plant with 75,000 brick daily capacity.

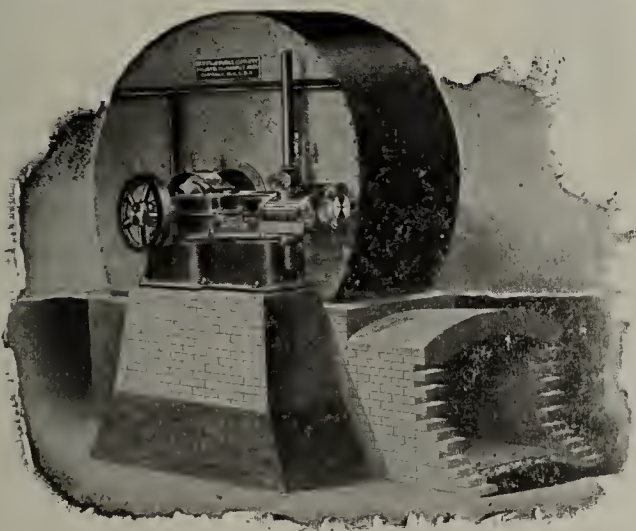
The Alonzo Curtis Brick Co., Grant Park, Ills., turned out 45,000,000 brick during the year 1906. This plant has the largest capacity of common brick in Illinois outside of Cook county.

The Bridgersville Stock Co., Wilbanks, N. C., has been incorporated with \$30,000 capital stock by N. W. Wiggins, S. P. Thomas, R. H. Thomas, I. T. Eason, M. D. Forbes, W. H. Robbins, and W. R. Wiggins, to build a brick works.

The Follansbee (W. Va.) Brick & Tile Co., has been incorporated by Virgil L. McCluskey of Cameron, W. Va., and H. A. Irwin of Pittsburg, Pa., and a plant will be erected on the Davidson land where there is a fine fire-clay deposit.

The Dover (N. H.) Brick & Pottery Co., has been incorporated under Maine laws with \$300,000 capital stock and has absorbed the R. R. Morris Brick Works and will build a \$75,000 plant. Horace Mitchell is president, and S. J. Morrison of Portsmouth, treasurer.

Buffalo Waste Heat Dryer.



"Buffalo" Waste Heat Fan Direct Connected Engine
Bottom Horizontal Discharge.

The first **WASTE HEAT DRYER** bore the name "**BUFFALO**." Economy is the watchword and in the third of a century since we began solving drying problems, there has been steady engineering progress.

"BUFFALO" WASTE HEAT FANS take the **WASTE HEAT** from the kilns and deliver it to the drying chambers, which can be automatically kept at any temperature and humidity. "**BUFFALO**" **FANS** have water-cooled bearings when necessary.

APPLICABLE TO BRICK, TILE AND TERRA COTTA PLANTS.

Our thirty years of success is due to a constant study of clays.

Write, stating requirements, and ask for catalog.

BUFFALO FORGE COMPANY, BUFFALO, N. Y., U. S. A.

CANADIAN BUFFALO FORGE COMPANY, MONTREAL, CANADA.

Robert Smith Tyler, Ala., is in the market for a complete outfit of brickmaking machinery.

The Lauderdale (Miss.) Clay Products Co., has been incorporated with \$500,000 capital stock.

Alfred Dewey is now the manager of the Scandia Brick & Tile Works at Madrid, Ia., since the death of H. F. Zartman.

R. Striekert has purchased the interest of J. H. Simon and C. G. Botts in the Brenham (Tex.) Pressed Brick Co.; the three being equal partners.

The Willworth Tile Mfg. Co., New York, has been incorporated with \$10,000 capital stock. Directors are: W. B. Willworth, E. A. Monfort and John Davis of Brooklyn.

The Detroit (Mich.) Vitrified Brick Co. has been incorporated with \$150,000 capital stock. Geo. W. Rutter is president, and E. J. Jeffries, secretary. The plant will be at Corunna.

C. W. Sheriff has been succeeded by Ed. Travis of Dows, Iowa, as manager of the Livermore (Ia.) Brick & Tile Works. Mr. Sheriff has taken a position with the tile factory at Sioux Rapids.

J. W. Taylor, who has been manager of the Union Brick Co., at Iolia, Kansas, for several years, has resigned and moved to Kansas City to enter the contracting business with the firm of Middleton & Son.

The Hillsboro (N. C.) Clay Mfg. Co., has been incorporated with \$100,000 capital stock by P. C. Collins, A. J. Ruffin, T. N. Webb, N. W. Brown, J. C. Webb, and S. Strudwick. They will manufacture brick, drain tile and sewer pipe.

Frank Derrick and associates are going to start a modern brick works near Inverness, in the Highland district, in Kentucky.

D. W. Carle, Manchester, Va., has bought twenty acres of clay land from the Drewry Estate and will build a large brickmaking plant.

The Joseph Soisson Fire Brick Co., Connellsville, Pa., has bought a controlling interest in the Pittsburg Art Store Co., which has a plant at Davidson.

The Central Brick & Tile Co., Kalo, Iowa, has been incorporated with \$10,000 capital stock. Wesley Bennett is president and T. W. Wonders, secretary.

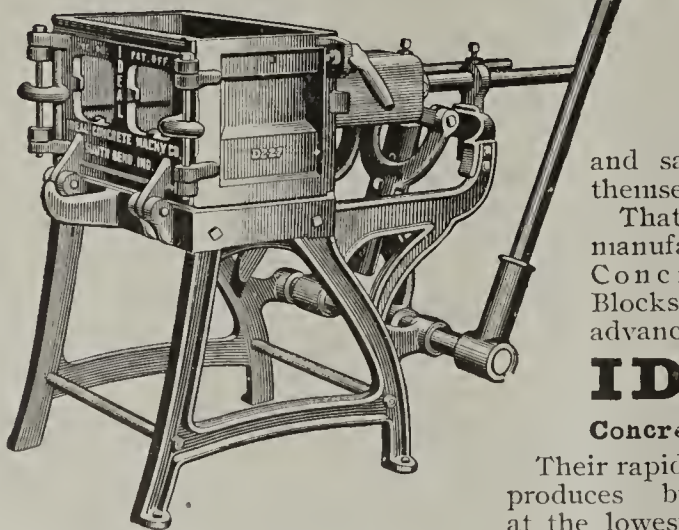
The Oregon Brick & Tile Co., Portland, Oregon, has been incorporated with \$50,000 capital stock. The incorporators are: R. G. Moss, W. S. Phelps and B. K. Davis.

It has been announced that the Vigo Clay Co., of Terre Haute, Ind., has purchased a clay plant at Cambridge, Ohio, and will begin at once to remodel the plant. John A. Dailey is the president of the company.

The Rensselaer (N. Y.) Brick Co., recently held its first annual meeting and elected the following officers: Abraham Ostrander, president, Homer Brayton, vice-president, H. R. Rollins, treasurer, and James Henderson, secretary.

R. B. Holmes and J. W. Shea have sold their interest in the Danville (Ills.) Brick Co., and W. P. Whitney, formerly general manager of the Wabash Clay Co., will become the vice-president and general manager. H. C. Adams is president and Thomas Hawkins is secretary. The factory will make paving brick.

HOW TO SELL BUILDING MATERIAL



The Ideal Concrete Block Machinery makes blocks at a cost that permits the underselling of all other building material.

Adaptable as to size of block and countless designs of face and natural stone effect.

Wonderfully simple. No chains, springs or gears.

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Offer the builder a material absolutely weather and fire-proof; superior in appearance and durability to brick, stone or lumber; lower in cost than either,

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Concrete Machines

Their rapidity of operation produces building blocks at the lowest possible cost. Embody the only principle (face down) permitting the practical use of rich facing material with less expensive material in back of blocks.

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Sole Agents for Canada"

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COAL, ETC.**

All Mineral, Animal and Vegetable Matter.

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue W. C.

American Process Co.,

62-64 William St.

NEW YORK CITY

FOR SALE

One Hercules Sr. brick machine; one disintegrator one mould sander, all Horton Mfg. Co. make.

One 40 h. p. gasoline engine; one 45 h. p. engine and boiler, made by Atlas Co.

One Kells machine, trucks, wheelbarrows, leather belting, shafting and pulleys. All in good condition. Will be sold cheap. For particulars address

W. H. VANDER HAYDEN,
Ionia, Mich.

BRICK AND TILE MACHINERY AT SACRIFICE

Where a country is tiled, factories are offered complete, or in part, Cheap. Have seven Brewer Mills for sale, one No. 6 for \$85.00, some larger sizes, little used, Engines, Boilers, Crushers, Drying Pipes etc. If you wish to buy or sell write. Can secure experienced help. Brick and Tile Machinery

Secor, Ill.

FOR SALE.

An up-to-date brick plant. Capacity 35,000 brick Cheap fail and labor. Fine shipping facilities and an abundance of pure loose clay. Local demand takes almost entire output at good price. Will bear close investigation. Good reason for selling.

Address, WM. M. READ,
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FOR SALE.

An interest in my tile and brick plant, to one of experience, that can take charge and run it. Must be able to invest some money in plant. Plenty of good clay at back door, and good market at front door. This is an opportunity that you don't often run up against. Plant now running. Come and see or write

S. H. RECORD,
Charleston, Ill.

BRICK YARD FOR SALE.

Brick Yard for sale cheap. A bargain to the right party. Good market at hand. For further information address

BRICKMAKER,
Care Clay Record, Chicago, Ill.

ROOFING TILE MAN WANTED.

WANTED—A young man experienced in the roofing tile business to act as Chicago city salesman Apply giving experience and reference,

Roofing Tile, care CLAY RECORD,
Chicago.

FOR SALE SECOND HAND 4 MOLD PRESS

in good order, one of the best presses on the market. Answer quick if you want it.

Address, G. care CLAY RECORD,
Chicago, Ill.

FOR SALE.

A well established brick yard near South Atlantic port, 60,000 population. Chambers 2nd cut machine, 46,000 brick daily capacity. Successful drying system, track to clay hole. A bargain. Satisfactory terms to good party. Address,

J. C. HAGLER,
Augusta, Ga.

SAND-LIME BRICK PLANT WANTED

WANTED—A sand and lime brick plant. Conditions good. Address,
BOX 2,
Big Run, Penn.

PLANT FOR SALE.

FOR SALE—A first-class Brick and Tile Plant in northern Minnesota, capacity 50,000 daily. Good reason for selling.

Address, JOHN C. PETERSEN,
Pelican Rapids, Minn.

SUPERINTENDENT WANTED

An experienced paving brick-maker who will take some stock in a paving brick company to be formed at Cheboygan, to make 30000 to 50000 brick a day. An abundance of the finest kind of shale, easily hauled and a very good market. Superintendent will have full charge, address.

A. M. GEROW, Cheboygan, Mich.

ENGINES AND BOILERS

Corlis engines, 20x48, 18x36, 16x42, 12x36. Also 40 other sizes and styles in stock.

Boilers, Tubular, 48x18, 78x16, 72x18. Also 60 other styles and sizes in stock.

Send specifications of your requirements and we will make you a proposition that will interest you.

THE RANDLE MACHINERY CO.
1732 Powers St., Cincinnati, Ohio.

FOR SALE.

A successful and going business, brick manufacturing plant in Central Ohio. Thoroughly equipped and up-to-date, owns in fee sufficient material to manufacture brick for many years. Located in city limits and directly on belt line railroad connecting with Pennsylvania and B. & O. Rys. Buildings, kilns and machinery in first-class conditions. Price \$50,000, liberal terms, capitalized at \$150,000 and will inventory nearly as much. Makes pavers, cut blocks, enameled, pressed and common brick. More orders on hand than can be filled. Good reason for selling; agents protected. Address or call on

J. W. JENNINGS,
1 Broadway, New York, Room 218.

FOR SALE.

Right and left-hand One, Two and Three Way Switches, of various gauges, radius and weight rail, at special prices.

THE ATLAS CAR & MFG. CO.,
Cleveland, Ohio.

FOR SALE—CHEAP—New and re-laying rails, 12, 16, 20 and 25 pound. For prices, address

ATLAS CAR & MFG. CO.,
Cleveland, Ohio.

FOR SALE AT A BARGAIN.

A drain tile and building brick plant. Everything in good first-class condition, with plenty of good clay and a demand for all that can be made in the line of drain tile and building brick. Plant is in operation every day and has no opposition. Has plenty cheap coal and labor. Our reason for selling, have other business. For further information, address

FORREST. LUH & CO.,
Rutland, Meigs Co., Ohio.

PALLETS FOR SALE.

FOR SALE—8,000 New All Steel Foot Pallets 34x10 inches. In good order. Can be had at a bargain. Address,

THE CLEVELAND CAR CO.
West Park, Ohio.

FOR SALE.

One Indiana road machine, belt; pulleys.
One 30 horse power Boiler, used one year.
60 brick cars, damaged by fire, parts easily straightened, very cheap.

4,000 feet, one inch steam pipe for dry kilns.
One Wellington brick machine, cost \$800, will sell for \$400 and load on cars. A man having \$2000 to put in brick and tile business can make a good deal by writing me.

C. S. BEADLE,
Saulte Ste. Marie, Mich.

WANTED

Competent and experienced salesman to handle brick making equipment. State experience and reference.

SALESMAN, care Clay Record
Chicago, Ill.

WANTED.

An experienced brickmaker as superintendant of a new brick plant located in one of the most rapidly developing sections of the south; no competition nearer than 200 miles in our line of manufacture. We are equipped with a four mould press, a nine foot dry pan, plenty of power and absolutely brand new machinery throughout. Our clay is at our back door. Will require an investment of \$3000 from party who wishes this position, and will give him absolute charge of the plant. Address

R. B. C., Care Clay Record, Chicago, Ill.

BRICK AND TILE FACTORY FOR SALE CHEAP

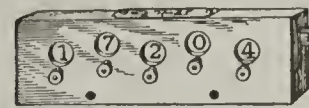
Good Sale for all the brick and tile you can make. Located in a county seat. Almost new machinery. No. 10 Brewer Brick and Tile Machine. Everything in first-class repair. Reason for selling no experience. Plenty of clay and shale handy. Call or address

W. W. BLY,
Rushville, Ills.

FOR SALE CHEAP.

One Monarch Brick Machine No. 166, capacity 35,000. One Brewer Clay Crusher, one Sander and Dump Table, four Brick Barrows, three Brick Trucks. About 16,000 Lath Pallets. Shafting and Pulleys. All the above are in good condition. Will sell all or part to suit purchasers. Address,

PFEFFER & SON,
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No better made, cut from \$3 and \$10, to

4 Wheel, \$3.00
5 Wheel, \$3.25

Guaranteed.
Sold by all dealers.

Paper Joggers quoted.
R. A. HART, 41 White St., BATTLE CREEK, MICH

FOR SALE

One Rotary Sand Dryer.
50 Brick Cars.

A. RICHARDSON, 1214 Filbert St.,
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BRICK PLANT TO LEASE

Will lease my brick plant at Sutton to good party for one-third profit or one-fifth of the out-put. Plenty of good clay. Good market.

S. HUNZIKER,
Sutton, Neb

FOR SALE

Eight Philadelphia Hand-Power Brick Presses, cost \$125.00 each. In good order. Will sell for \$25.00 each. One large Ornamental Brick Press with four moulds, and 20 dies, cost \$150.00. All in good condition. Will sell for \$100.00.

H. C. KAUFER & CO
Trenton N. J.

PARTNER WANTED.

A good, reliable man of experience, with some capital to invest in and take charge of a new Dry Press Brick Plant. Plenty of shale, and good market for all the brick. Address

DENIS, care Clay Record,
Chicago, Ill.

HELP WANTED

WANTED—A man who has worked in the shipping department of a clay pressed brick plant. Steady work all the year. State experience and salary expected.

INDIANAPOLIS COMPOSITE BRICK CO.
Indianapolis, Ind

FOR SALE

Fine opportunity. Money making 30,000 capacity soft mud brick yard in best building town in Indiana. Can't supply the demand. Owner has larger interests. Easy terms. Write for details.

TERRE HAUTE PRESSED BRICK CO.,
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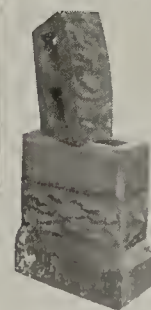
WANTED

To buy or lease a brick plant having shale or fine clay, raw material and down draught kilns. Address
E. care of CLAY RECORD
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FOR SALE

One 40 Horse-Power Boiler, nearly new.
Two 20 " " Engines, good running order.
Revolving Screen, 30 inches by 10 feet. One heavy Clay Crusher, Twenty-foot Conveyor, come see them.

H. C. KAUFER & CO.,
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ARE DURABLE, HANDSOME
AND INEXPENSIVE

Big Money Made by Manufacturing Them

NO IDLE
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PETTYJOHN PORTABLE
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Is the Best, Fastest & Simplest

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FRANK TOOMEY

127 and 131 North Third Street.
PHILADELPHIA, PA.

Great

Assortment,

3,200

Pieces.

ENGINES,

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Automatic,

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Slide Valve,

Pumps,

Dynamos,

General

Machinery of

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Rebuilt and

Guaranteed.

Immediate

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A Manual for all Engaged in the
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JUST OUT : : PRICE \$2.00

Latest Improved Wonder of the Age



I now propose to give
all a chance
to try

The Swift System

by remodeling one
kiln or build one new
one. Write for par-
ticulars to the

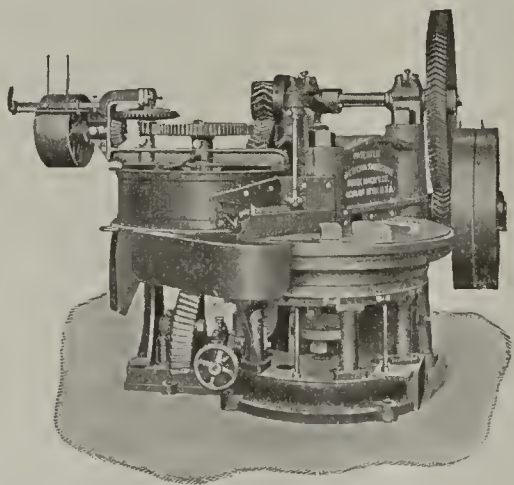
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E. F. SWIFT

514 West Fourth St.
Dayton Ohio.

The American Sandstone Brick Machinery Co.

INCORPORATED APRIL, 1902
SAGINAW, MICH.



Improved Komnick Rotary Presses

Are now being built with extra table for making fancy brick,
on which double pressure is exerted.

Don't confuse our Practical System with the so-called
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tical Machinery, the Practical Press, the Practical Hydra-
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own Shops, under the supervision of Practical Men with
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Our plants are installed under the supervision of Prac-
tical Engineers who know how Sand-Lime Brick should be
and can be made. We have Practical Plants Running
Successfully to show to prospective investors.

WE ARE NOT SCIENTISTS

We Produce Results, because we are the Oldest Practical
Sand-Lime Engineering Company Doing Business in the
United States, and we defy contradiction.

CLAYS

Their Occurrence, Properties and Uses

With special reference to those of the
United States, by Heinrich Ries Ph. D.

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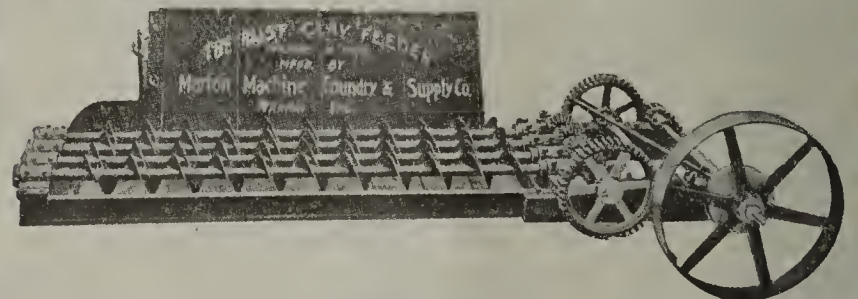
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A NEW CLAY FEEDER AND MIXER

The Rust Clay Feeder has been brought out in response to a better
method for mixing and feeding clay in brick, tile and all clay working
plants. By the use of this feeder the services of two men are entirely dis-
pensd with, the clay being dumped into hopper of machine from car is
automatically fed into the disintegrator. The spirals draw their supply
evenly from all parts of the hopper, mixing the clay perfectly, which
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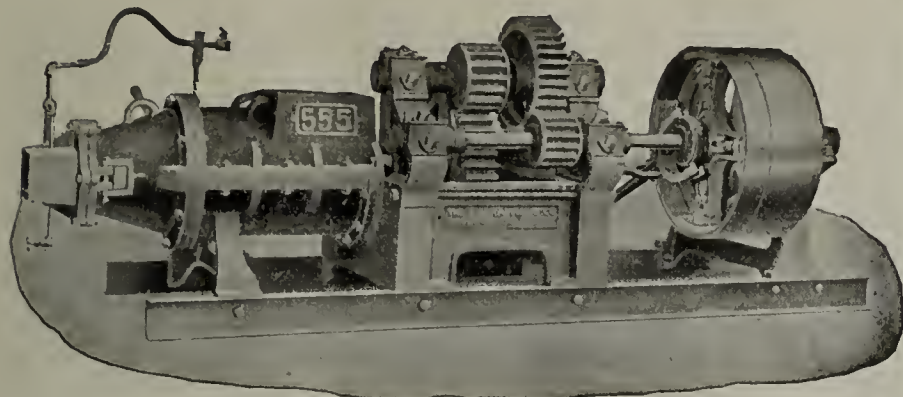
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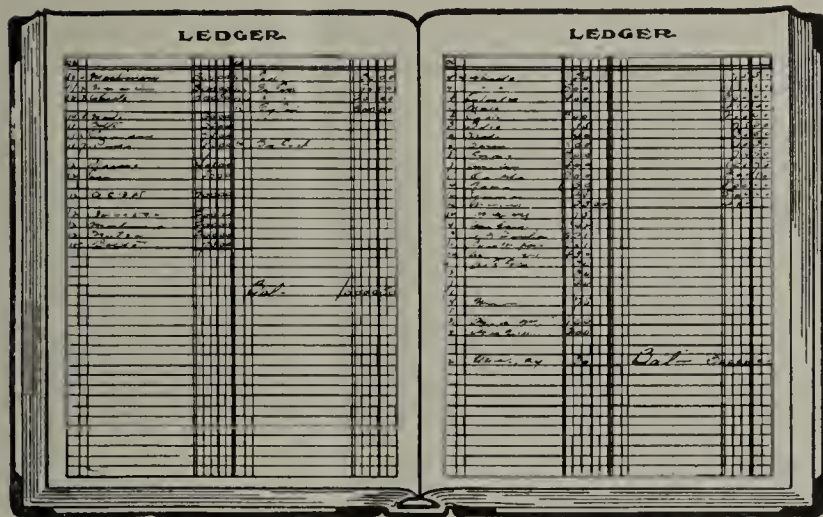
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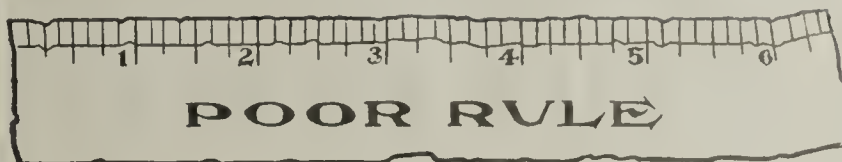
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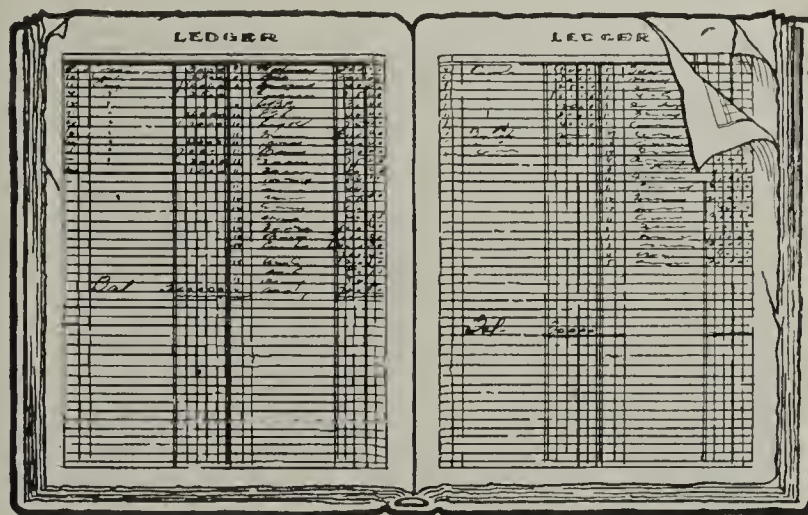
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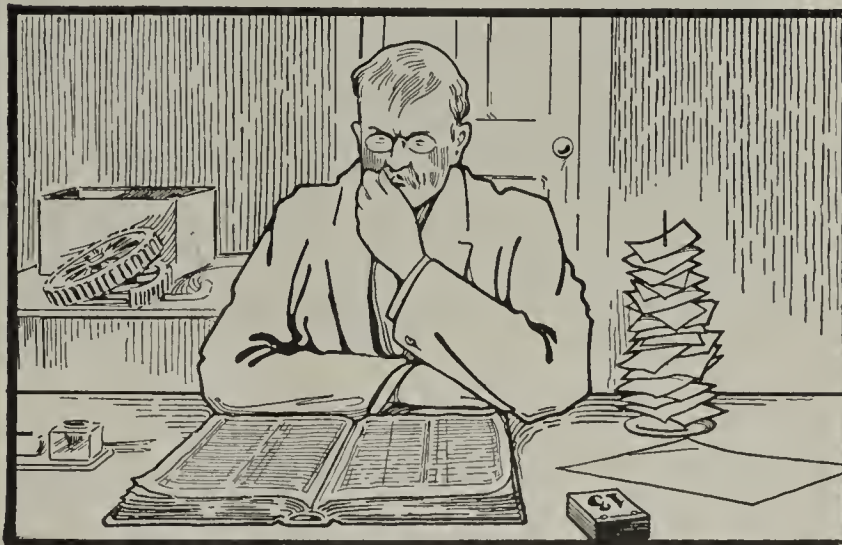
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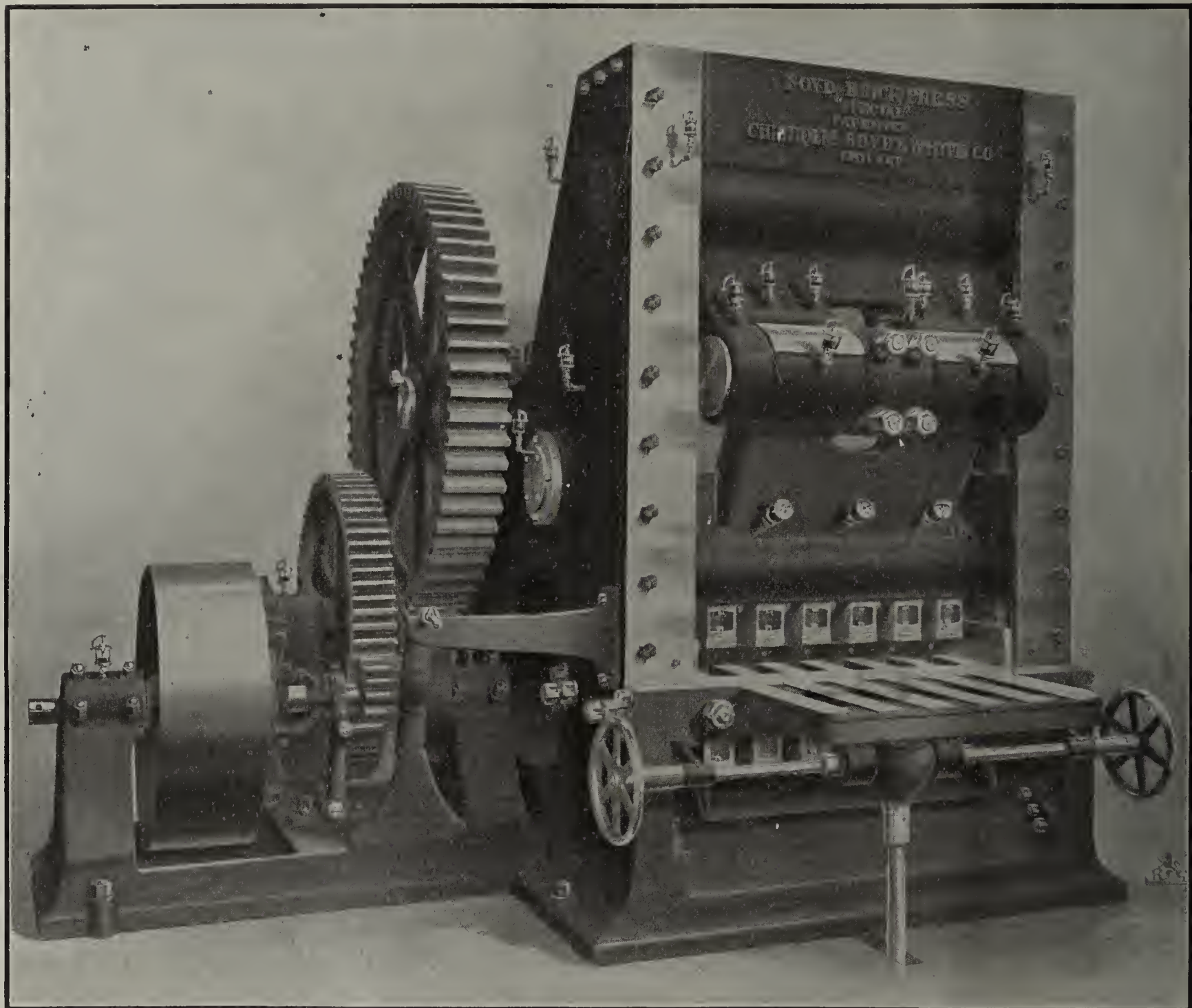


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SIX-MOLD "SPECIAL"



The Boyd Brick Press "Special" has enormous strength and great durability; it is compact; the adjustments are convenient; it operates quietly and smoothly; the workmanship and material are of the best; the design ingenious. It is a masterpiece, embodying the most perfect application of scientific and mechanical principles in the art of brickmaking.

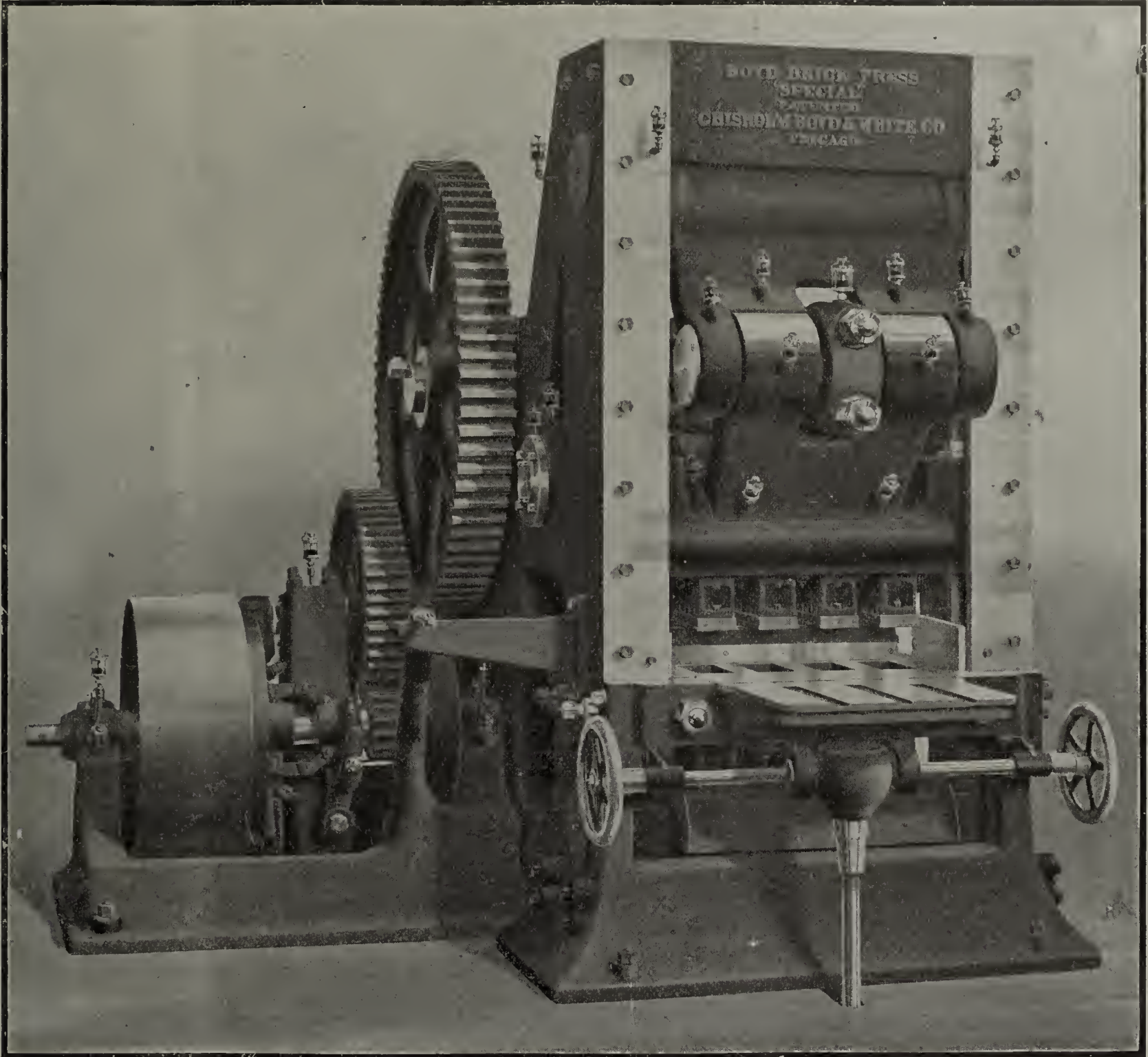
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THE BOYD BRICK PRESS

FOUR - MOLD "SPECIAL"



THE BOYD BRICK PRESS exerts greater pressure, holds it longer, puts more clay into brick, and makes stronger brick than any other Brick Press made. Especially adapted for working shales, and is the only successful machine for making fire brick.

ALL BOYD PRESSES are fitted with our IMPROVED PATENTED MOLD BOX, the liners of which are made of the hardest and toughest known metal, which can be reground at low cost when worn. The molds can be changed in a few minutes.

ITS RECORD: More Boyd Presses in actual operation than of all other Press Brick Machines combined. Write for Catalogue.

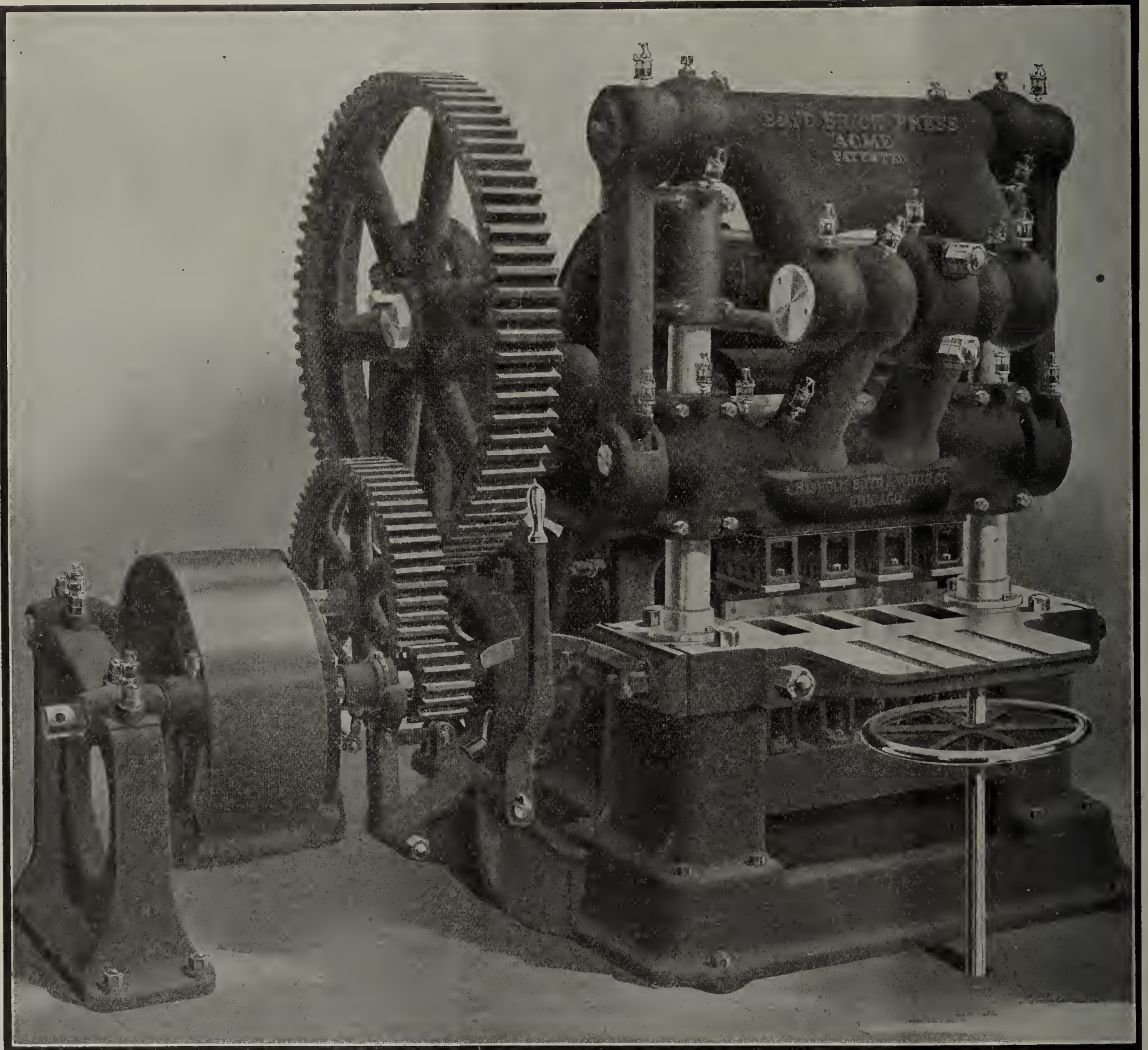
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IT'S NAME A GUARANTEE. The FOUR-MOLD PRESS above illustrated is our latest improved machine of this design. Over ONE HUNDRED now in use. Especially adapted for working shales.

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We will send to any responsible party a BOYD BRICK PRESS ON TRIAL and subject to purchase after the making and burning of one or more kilns of brick. We take the machine back if not satisfactory. We design and equip brick plants complete. Correspondence Solicited.

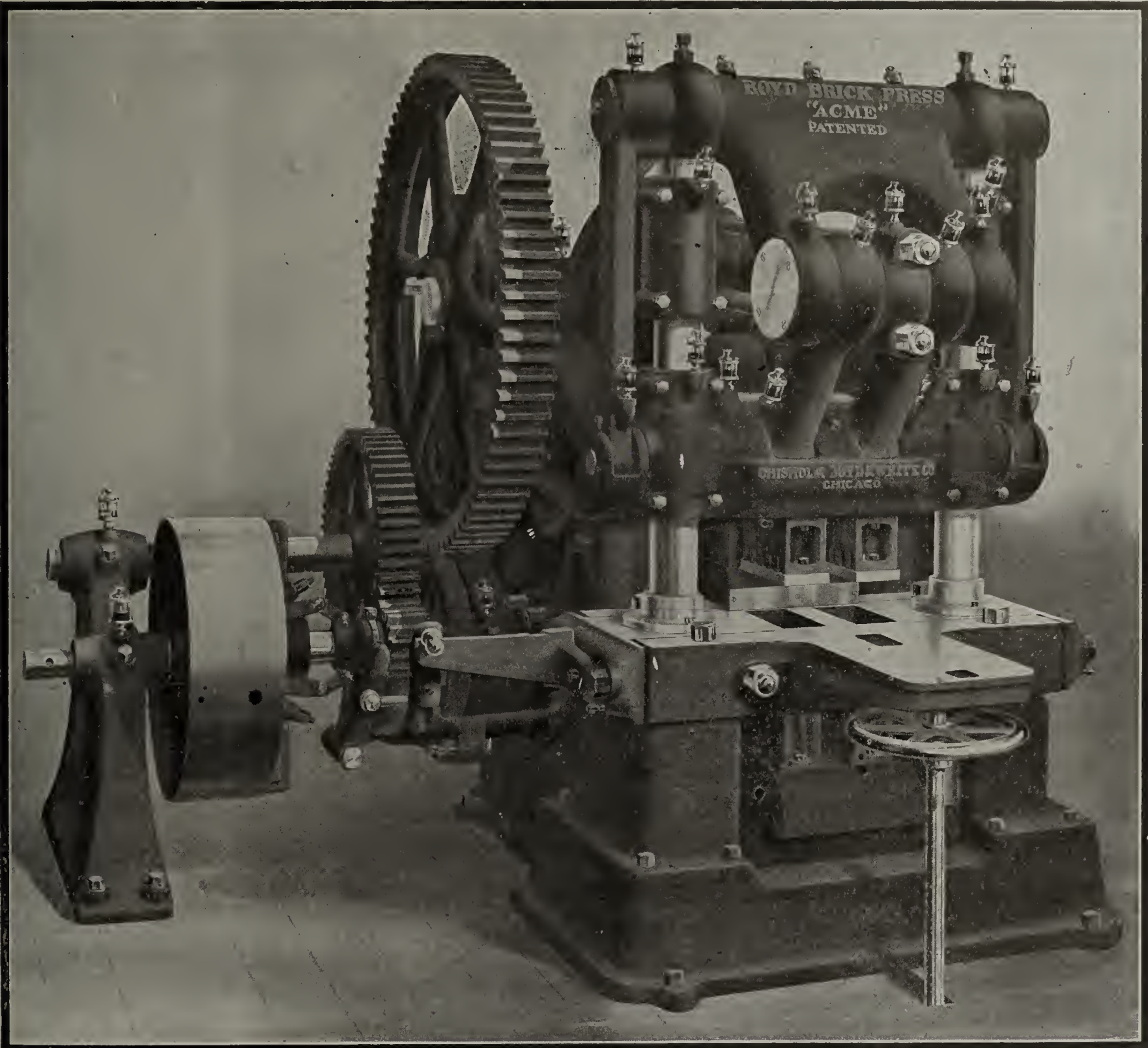
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The Two-MOLD Press above illustrated, is especially adapted for Brick Plants of small capacity, and for making ornamental and shape bricks it has no superior. It has never failed to give entire satisfaction, and is guaranteed for two years against breakage.

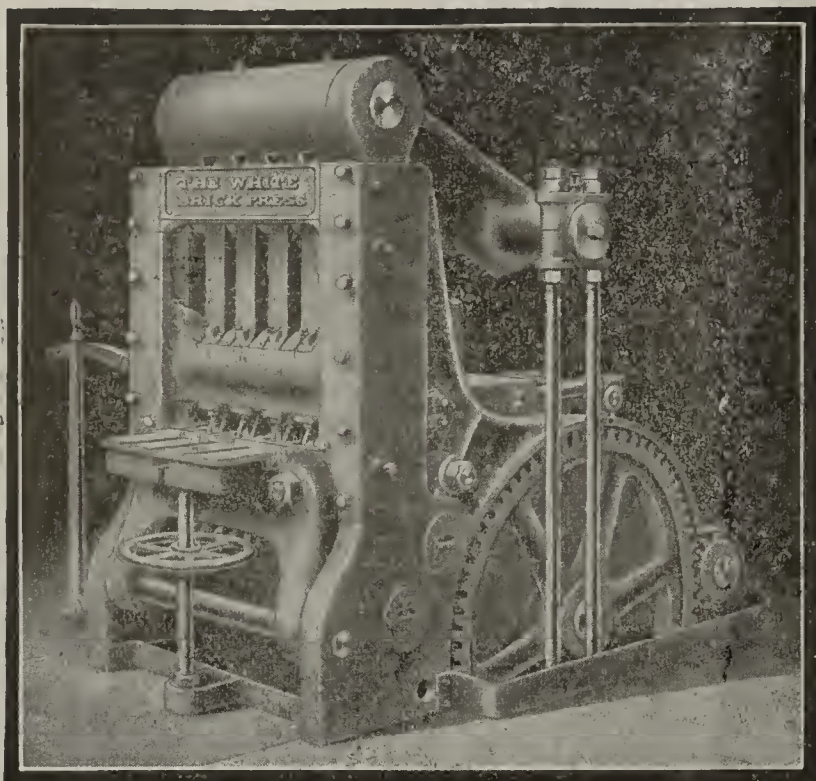
BRICK PRESSES are too costly for any one to experiment with. SEVENTEEN YEARS of practical experience back of each Boyd Press.

CONSIDER THIS: Your Brick Plant may be properly constructed, well located, with an abundance of good clay or shale, and a good market at your door; but unless your Brick Press is always ready for a day's work you will not get proper returns from your investment.

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New White Press

Especially designed for making Sand-Lime Brick. Strongest, Most Powerful, Most Durable, and Most Convenient. Molds removable; can be changed in seven minutes.

Send for Special Press Catalogue.

SAND-LIME BRICK

Complete Plants installed, started and operated until the first 100,000 brick are made. No risks, delays or expensive experimenting.

Strongest possible guarantees. This is the *Only Safe Method* for parties going into any new industry.



Our Latest
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Mailed Free.

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BERG BRICK PRESS

The highest development of the Art of Brickmaking Machinery so pronounced by the United States Government.

The BERG for the highest grade of pressed brick of shale or clay. It makes all kinds of shapes and sizes of brick. Changes from one shape to another can be made in less than an hour's time.

First-Class Workmanship. Cut Gearing. Fully Warranted.

The BERG makes the **best** sand-lime brick and cheapest because it is the strongest machine and gives the highest pressure. Thirty-five sand-lime plants in United States use the **BERG** Brick Press **SUCCESSFULLY**.

The BERG **MAKES** the highest grade of fire brick. Can make all kinds of shapes desired for fire-brick purposes.

Three distinct pressures make the brick evenly pressed all through. No granulated centers of the brick.

The BERG is the **best** for sand and cement because of its strong pressure. Uses less ce-

ment, makes cheaper brick.

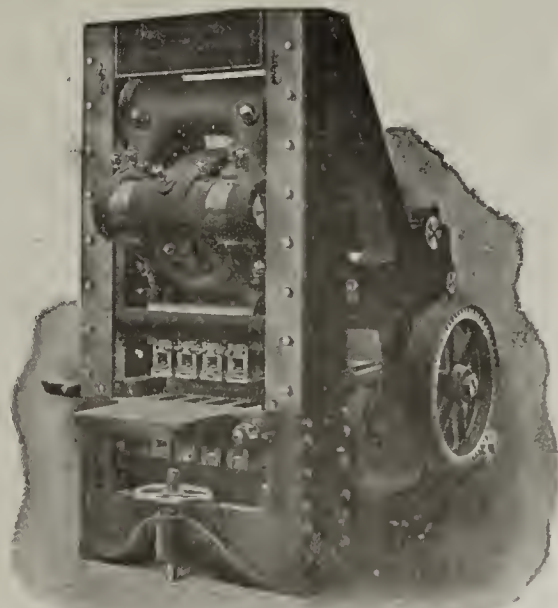
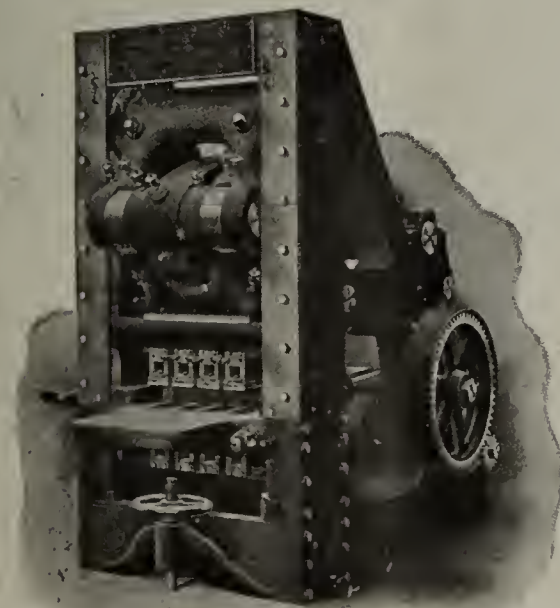
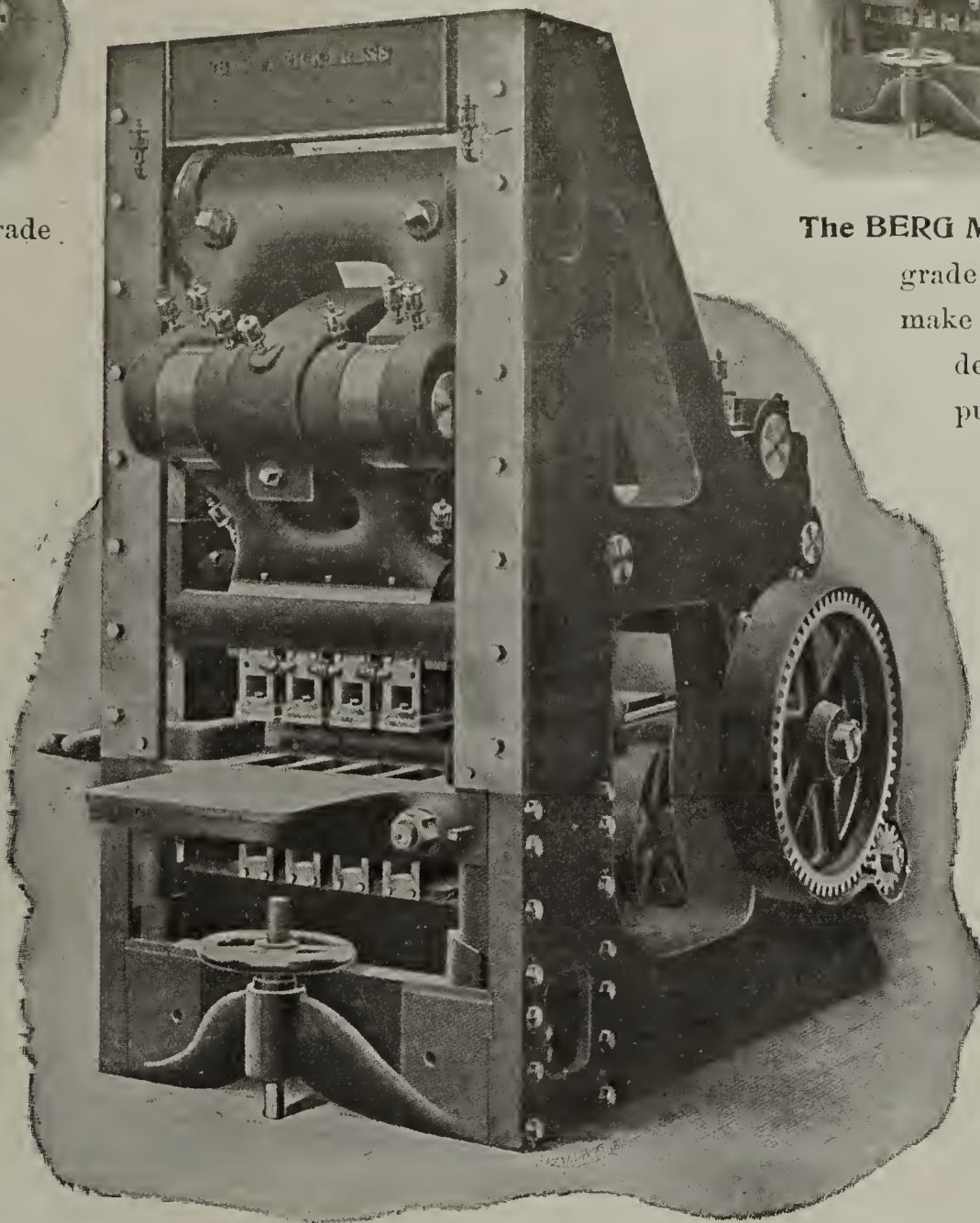
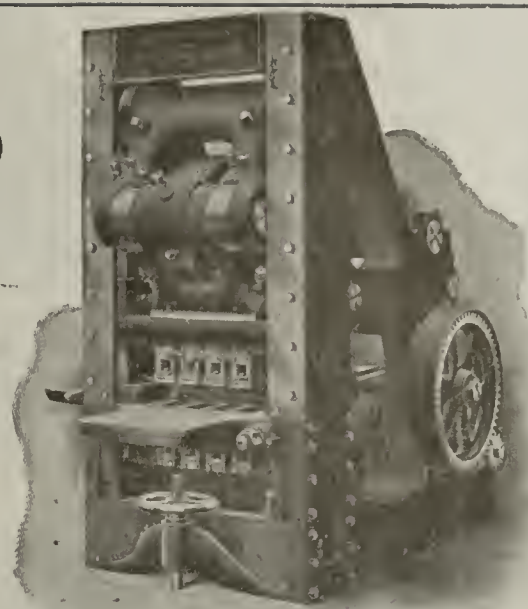
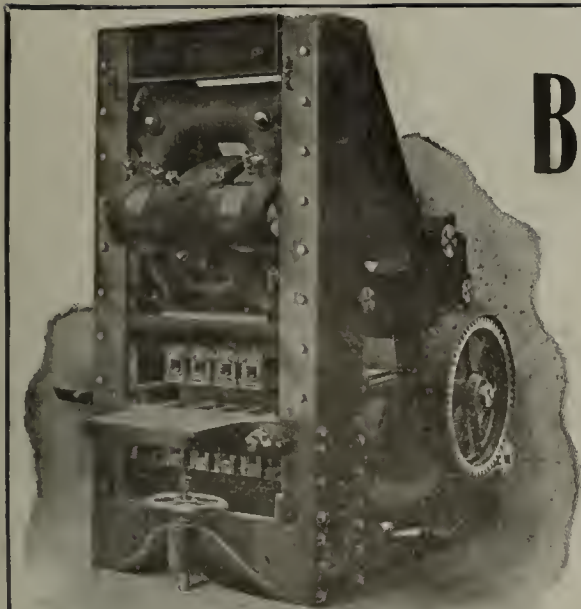
The 1905 Berg Press

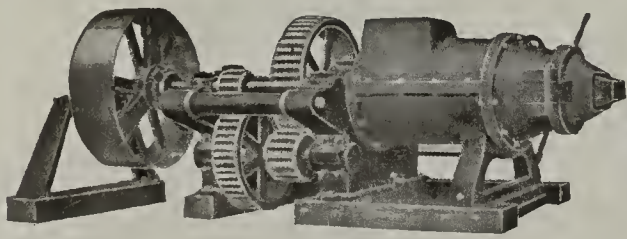
Many other steps further forward in improvement and highest grade of material and workmanship, also cut gearing. Fully guaranteed as to its success. Manufactured by its inventor in Toronto, Canada, exclusively. Plans and specifications on the different kinds of plants furnished, also all equipments.

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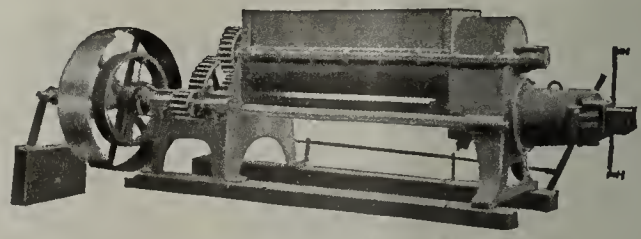
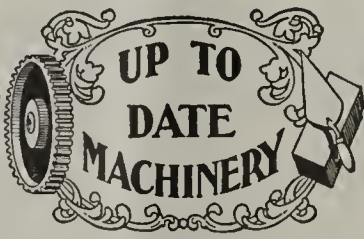
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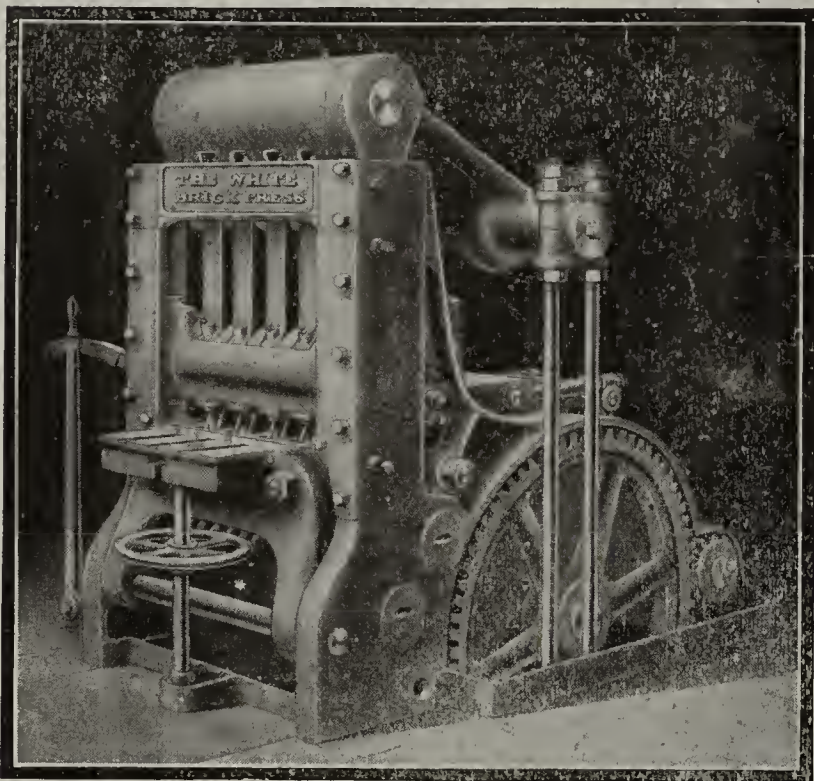
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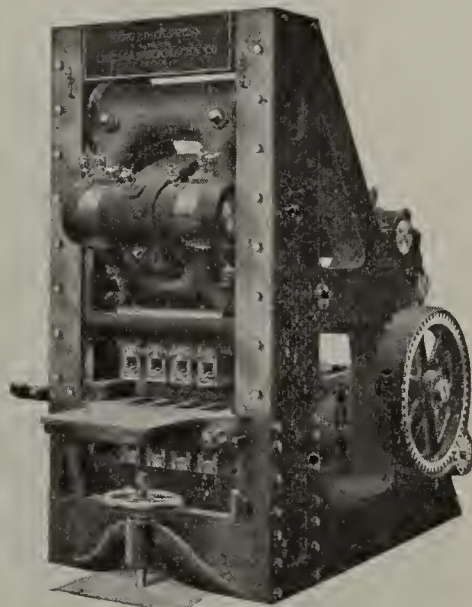
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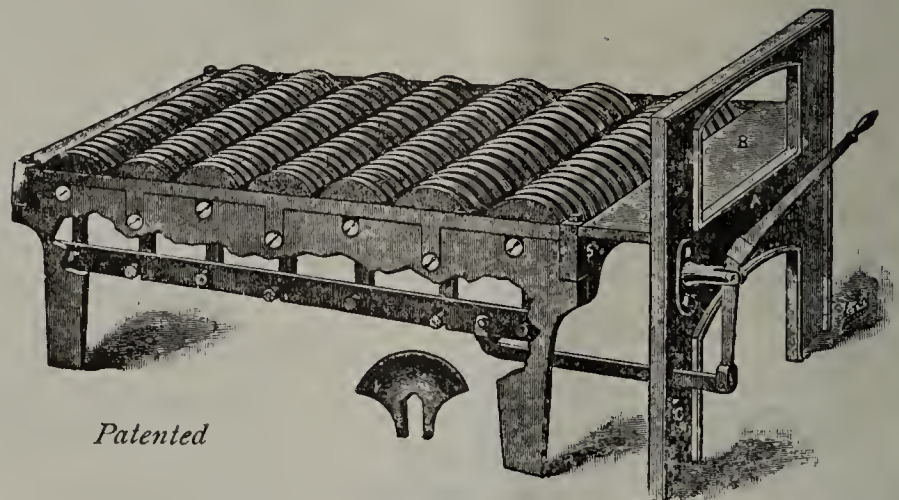
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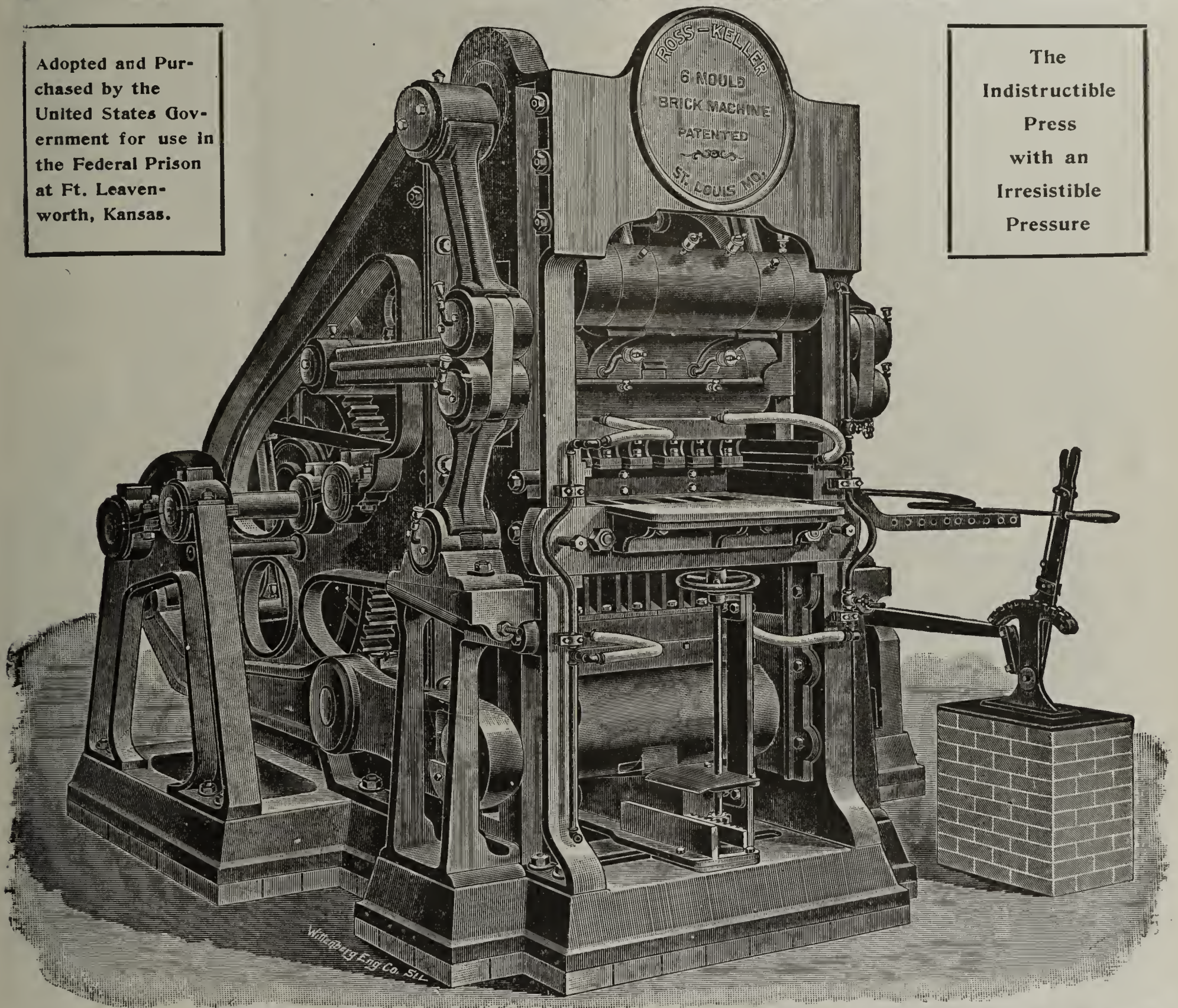
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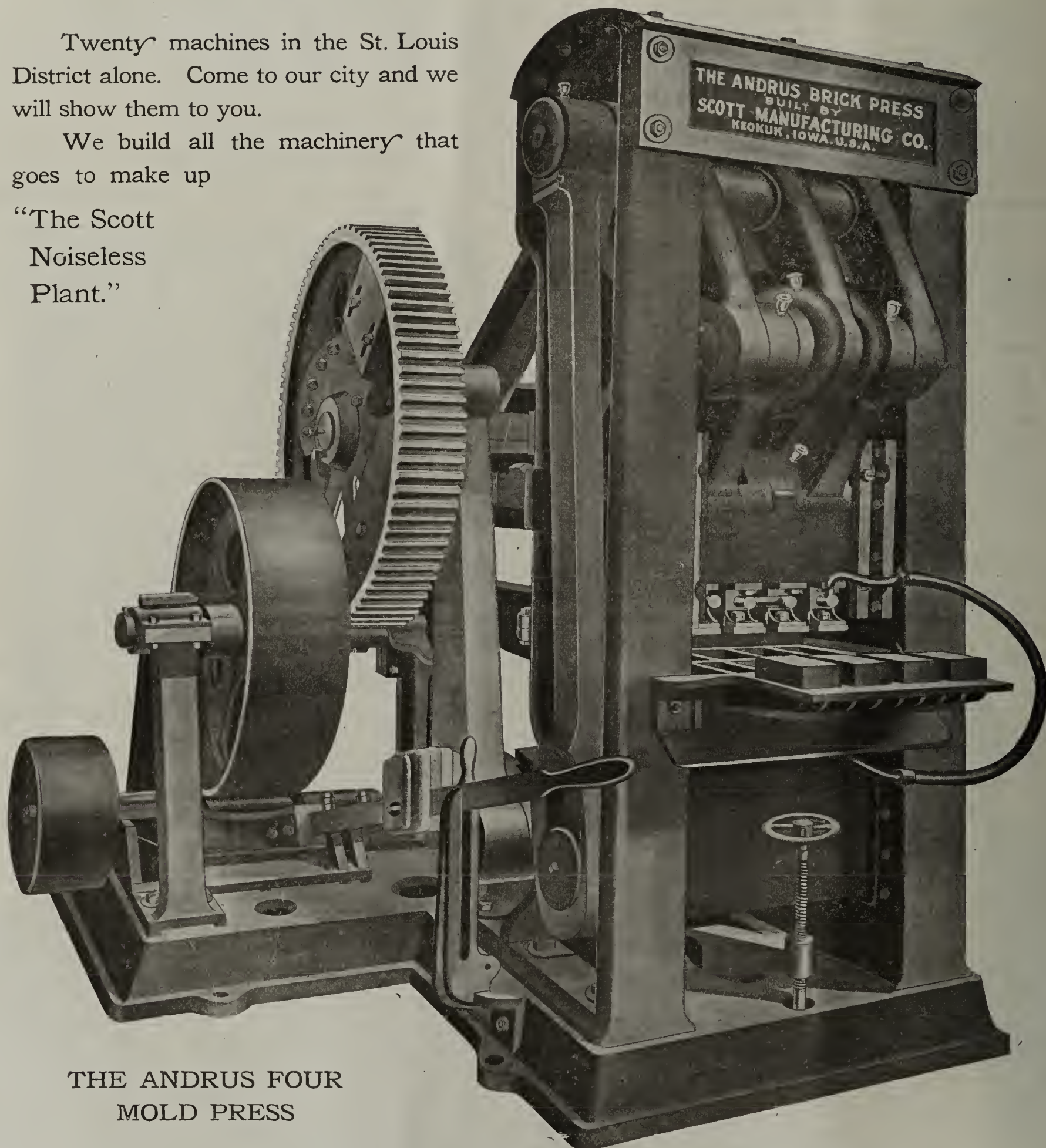
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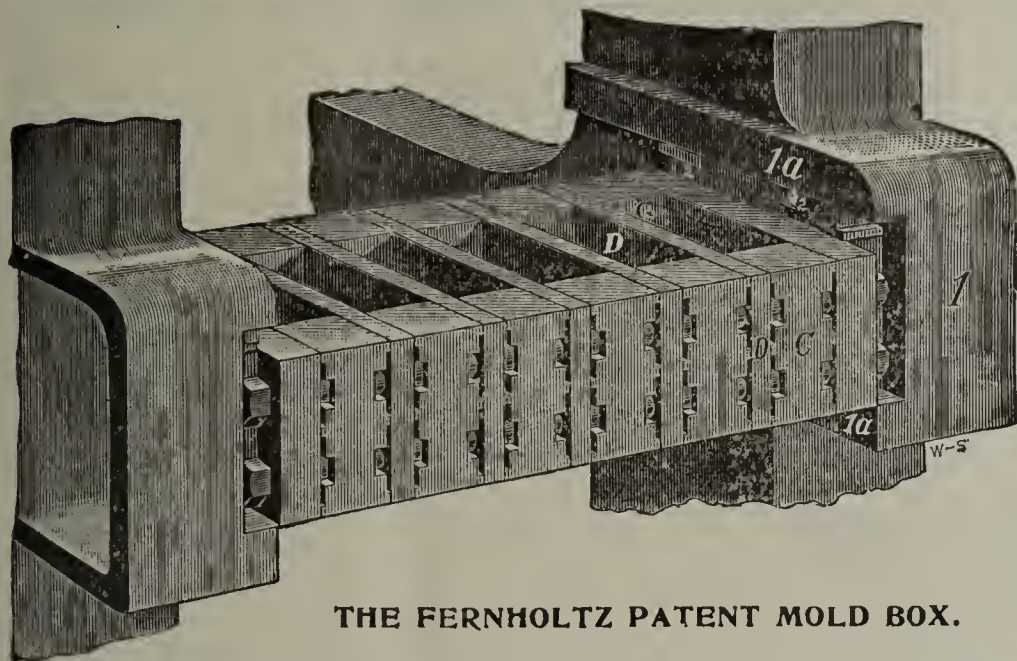
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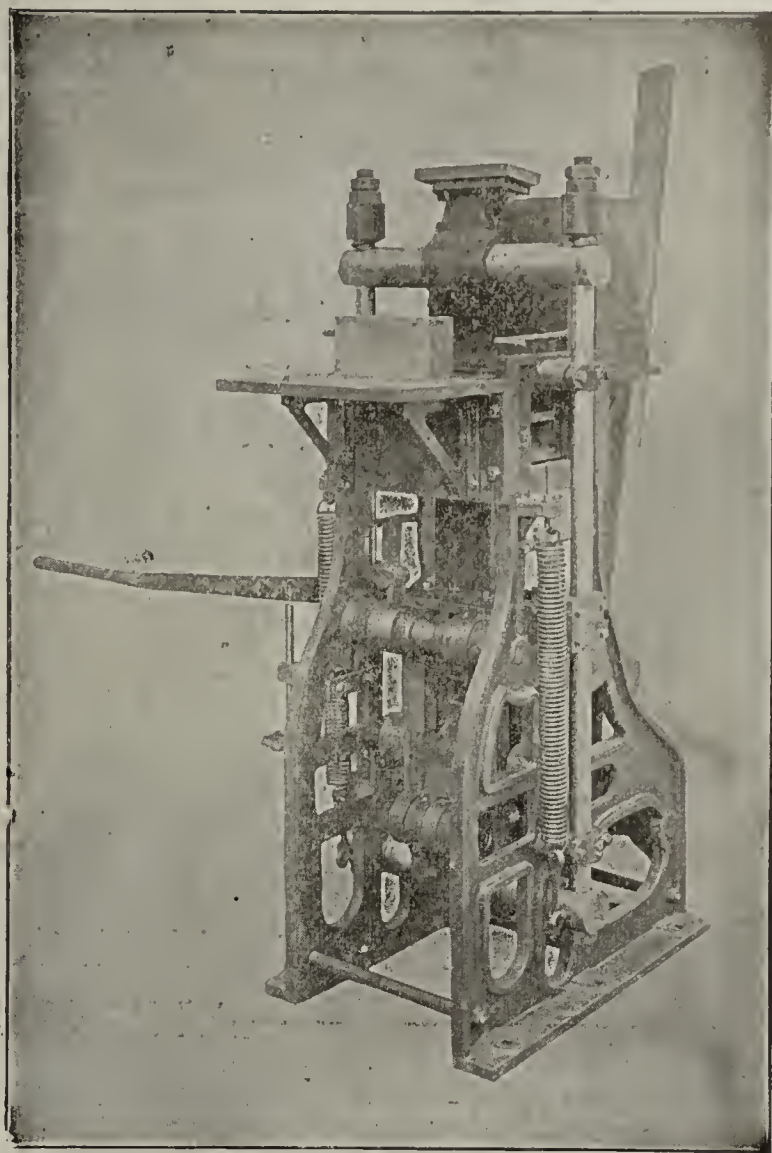


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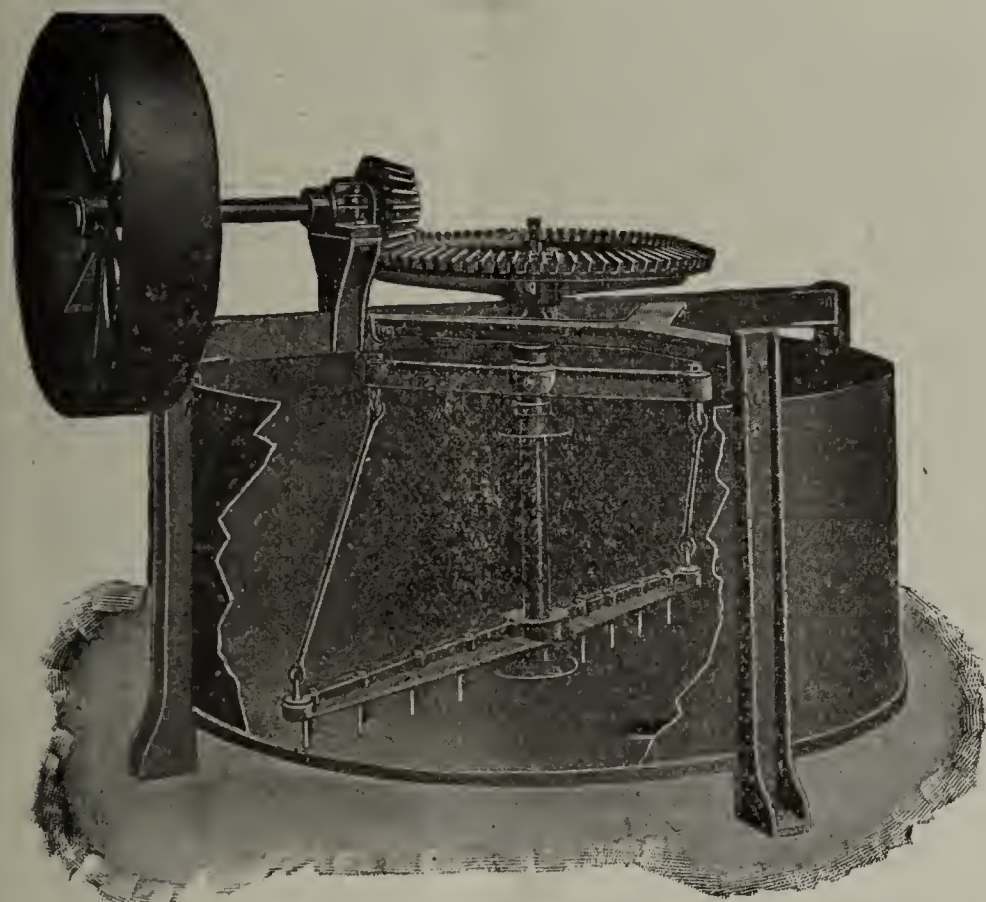
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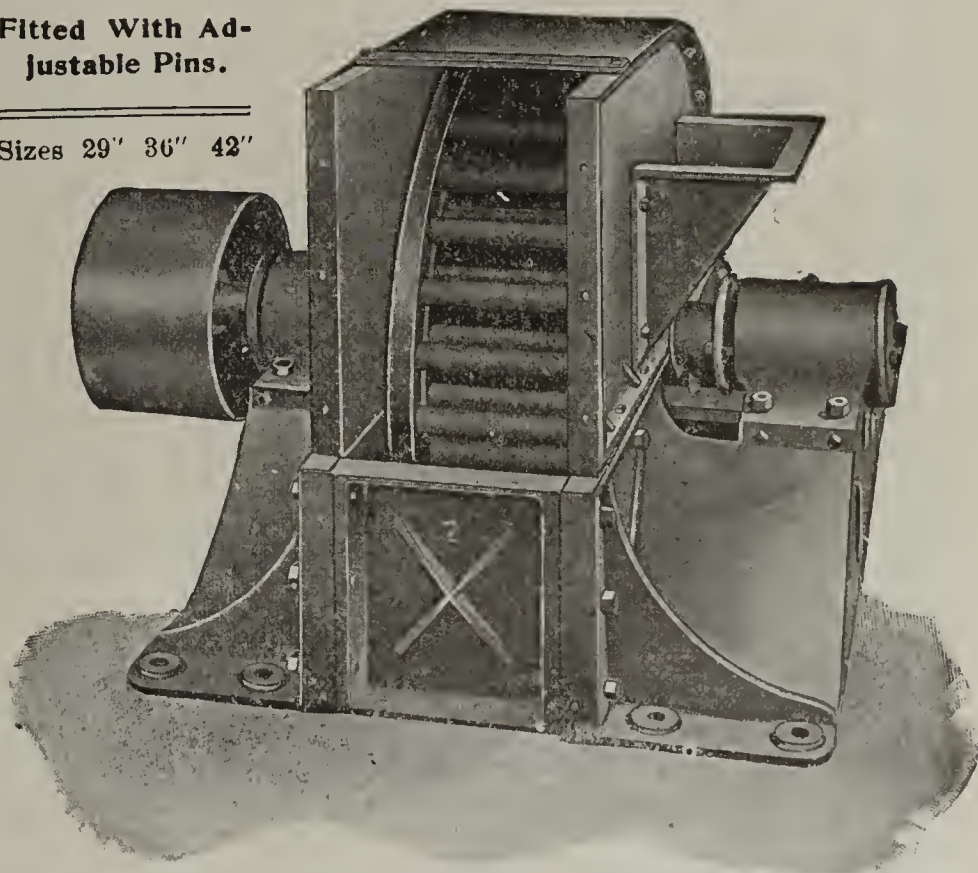
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SEND US A SAMPLE OF YOUR CLAY.

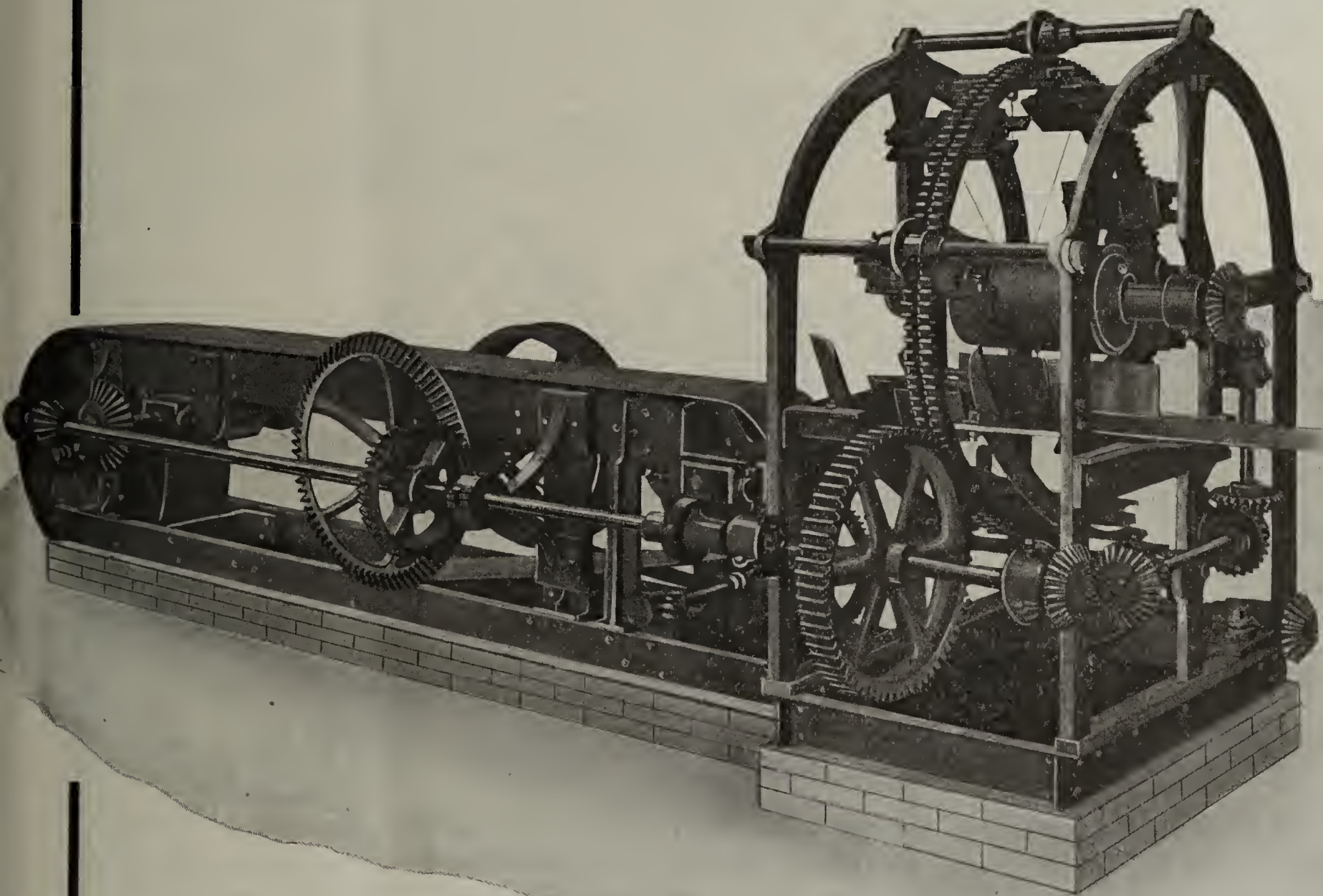
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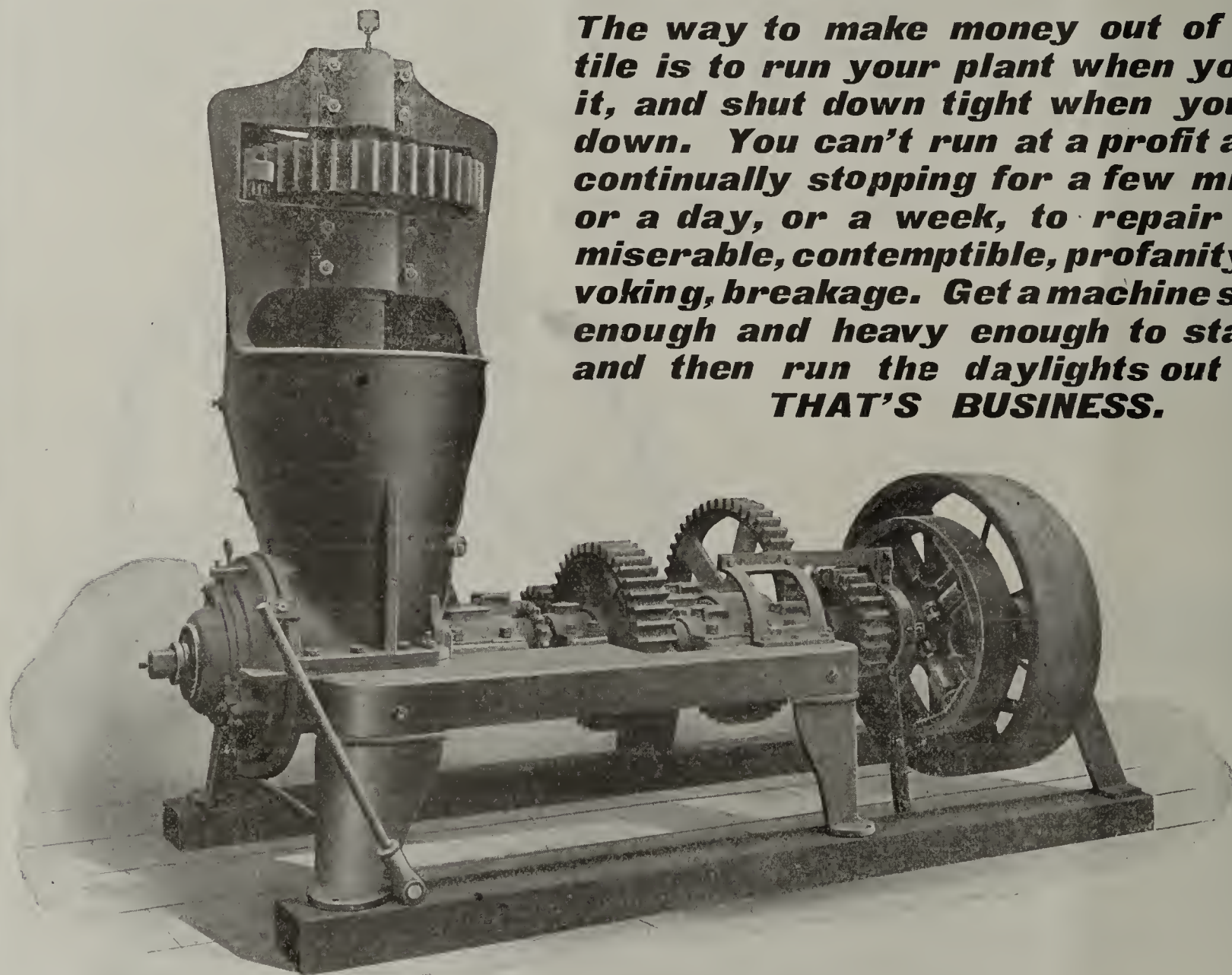


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*The way to make money out of drain tile is to run your plant when you run it, and shut down tight when you shut down. You can't run at a profit and be continually stopping for a few minutes or a day, or a week, to repair some miserable, contemptible, profanity provoking, breakage. Get a machine strong enough and heavy enough to stay put and then run the daylights out of it. **THAT'S BUSINESS.***

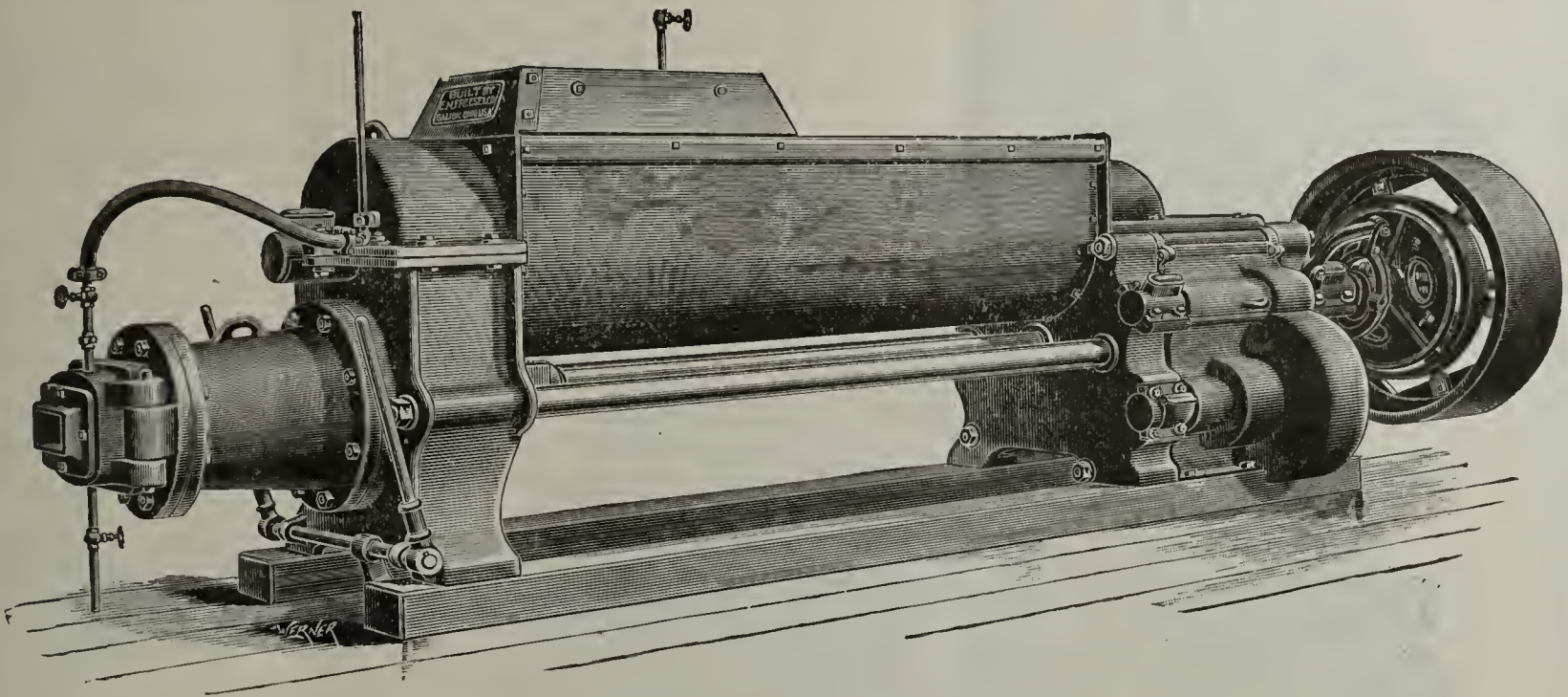


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is a drain tile machine which you can depend upon; one that will stand a lot of abuse. It drives easier and makes better ware than any other machine of its size. It's right. Weighs 10,500 pounds. Cores held without bridge or bracket. Smaller sizes for smaller plants. Get catalogue and full description.

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Don't forget our Automatic Cutters. They give satisfaction.

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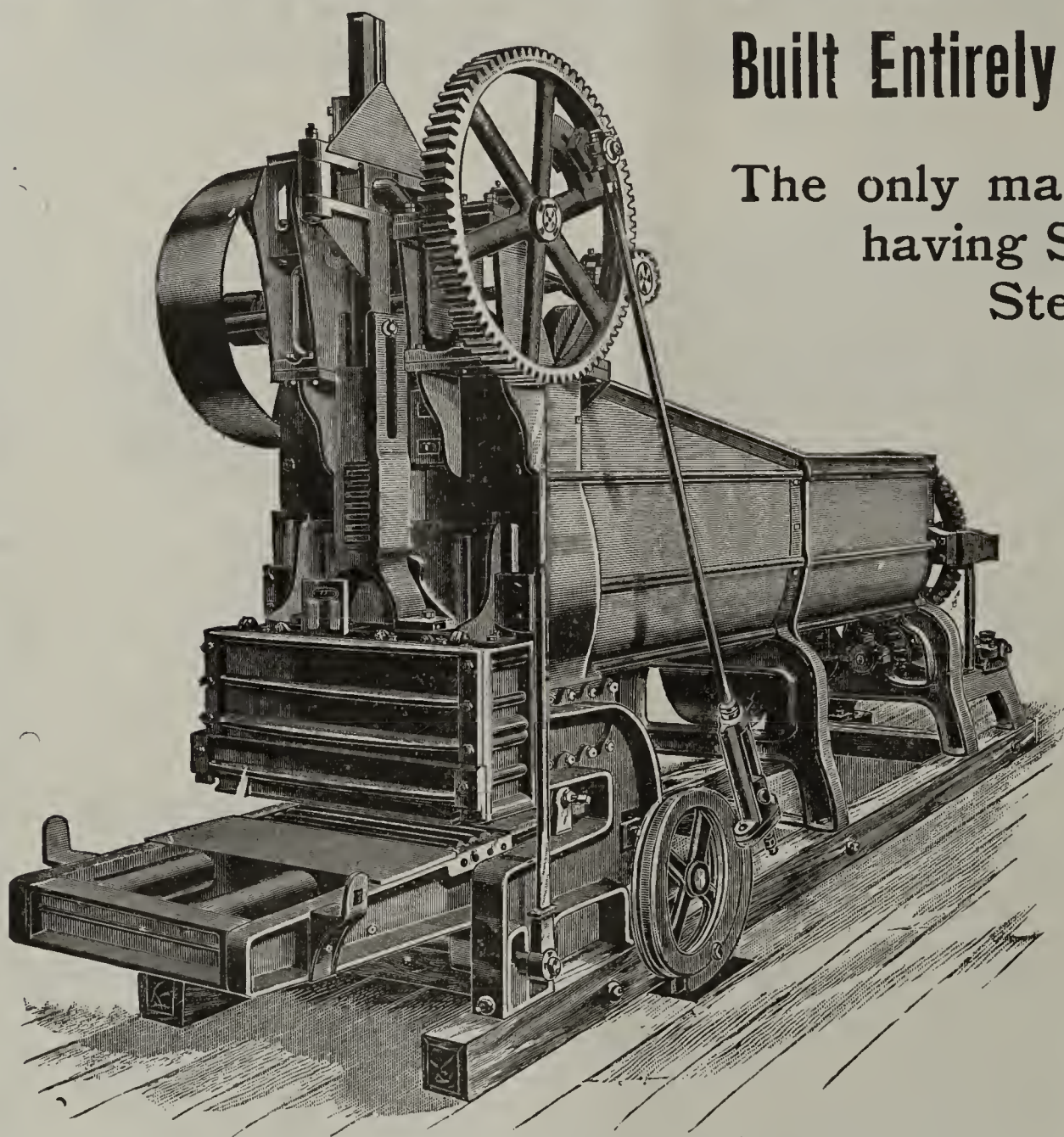
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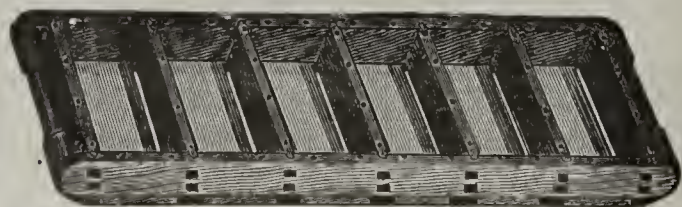


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No extra pug mill required to enable working the clay direct from the bank. Its great strength enables working the clay as stiff as practicable, insuring brick which will be STRAIGHT and SQUARE.

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It has **No cars**

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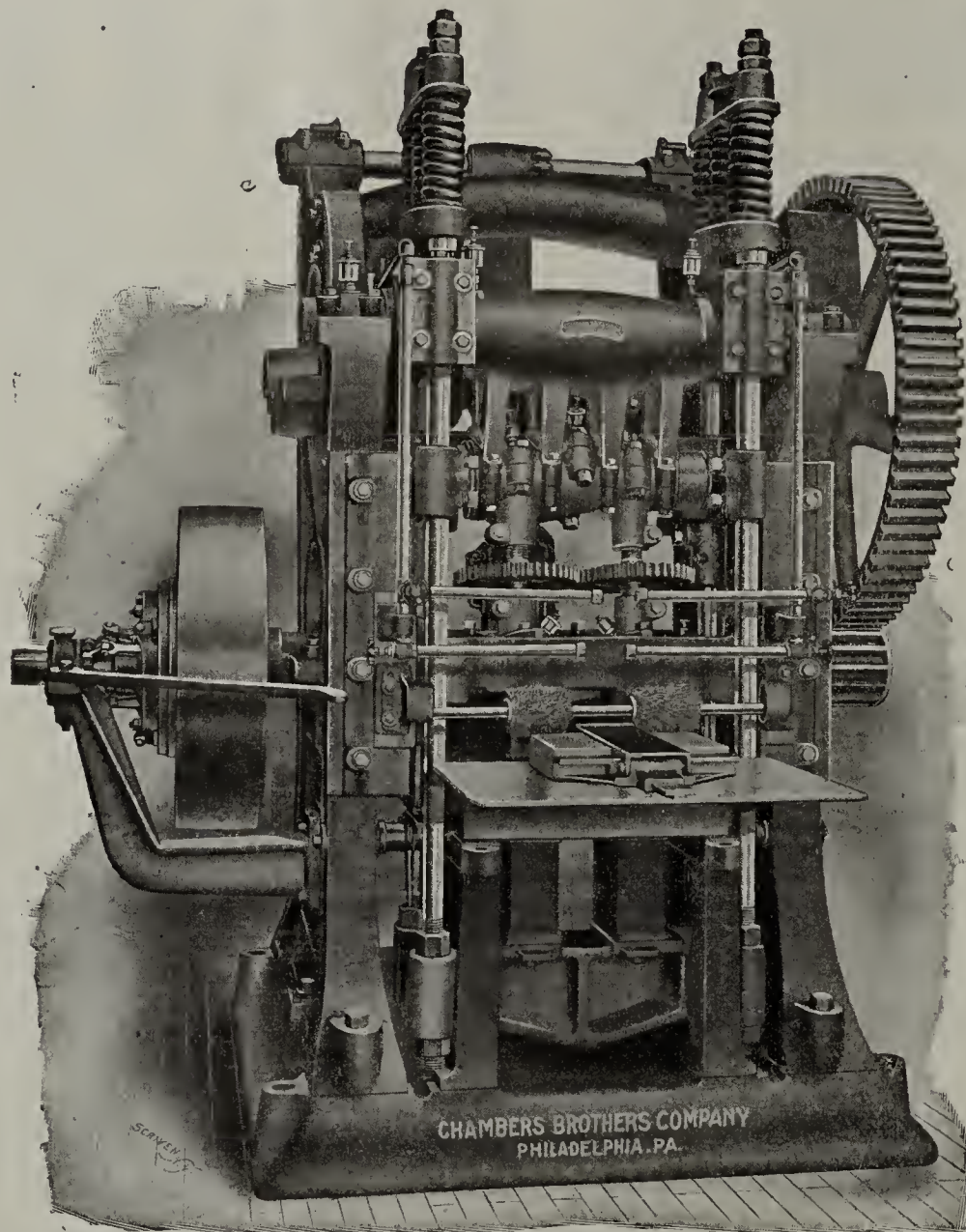
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 Capacity
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 per hour.



Single Crank
 Movement
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 all above the
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THE PHILADELPHIA REPRESS.

Automatic End Cut Brick Machines of five sizes, having capacity
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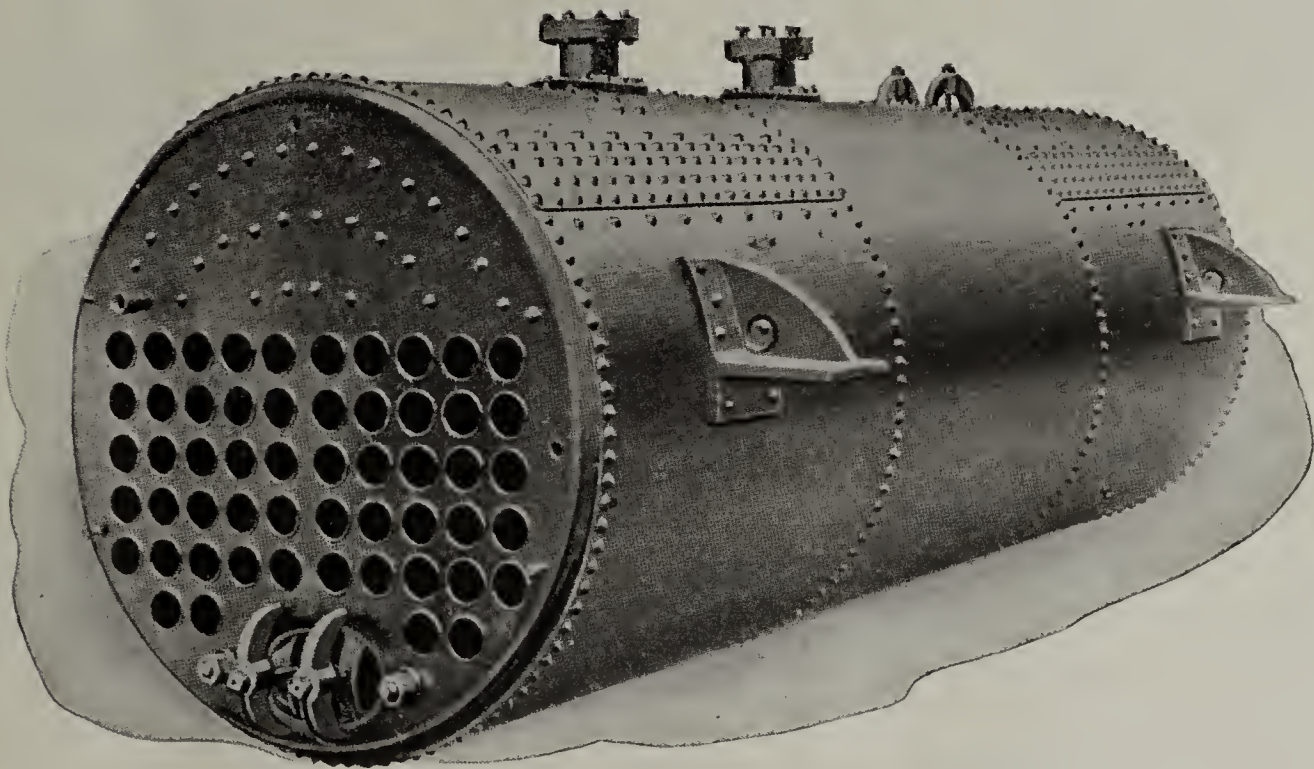
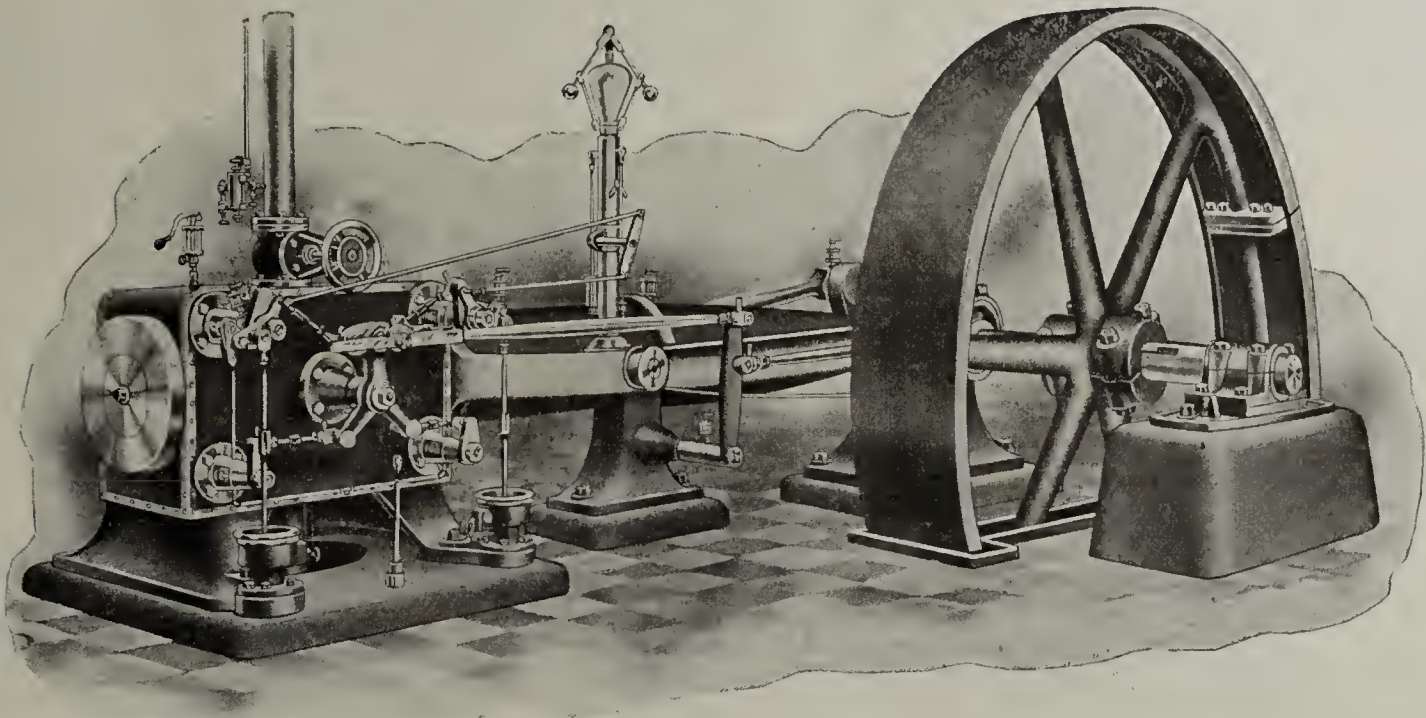
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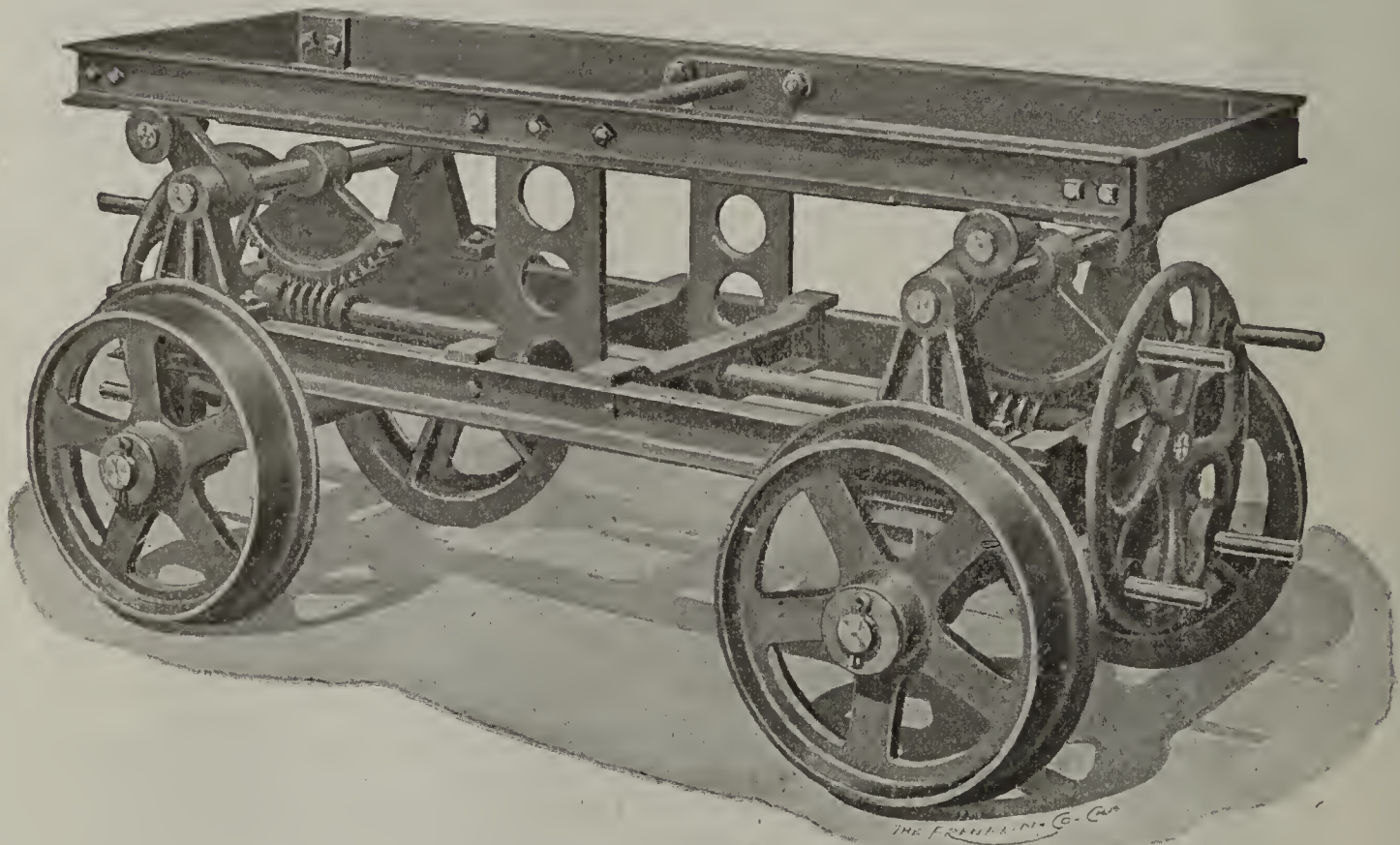
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Write us in regard to this car and also let us tell you all about the "**PREMIER**" line of Clay-Working Machinery.

The J. D. Fate Company
PLYMOUTH, OHIO



Vol. XXX. No. 2.

CHICAGO, JANUARY 30, 1907.

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Single Copies, - 10 Cent.

A REPORT OF THE TWENTY-NINTH ANNUAL MEETING OF THE ILLINOIS CLAY WORKERS ASSOCIATION.

The Twenty-ninth Annual Convention of the Illinois Clay Workers Association was held in the city of Champaign on January 22, 23 and 24. The first session was called to order Tuesday afternoon, January 22, by President John W. Stipes. In the absence of the Hon. George W. Gere, who was to have made the address of welcome, Mr. S. P. Atkinson, of Champaign, was introduced by the president.

ADDRESS OF WELCOME

Mr. President and Gentlemen of the Illinois Clay Workers Association. It is certainly a pleasure for me to welcome a body of men to our city who have done so much for Illinois. Back 35 years ago, and even 25 years ago, I can remember an incident that happened on Main St. in Champaign when a man came here with a hundred thousand dollars to invest, but one of the first things that he saw was a four-horse team stuck to the hubs in the mud and he did not invest. Gentlemen, those conditions would exist to-day if it had not been for men like you. I can remember back forty years and even thirty-five years when, a little north on the Illinois Central Railroad, there was a pond nearly a mile in length that was filled with more than ten thousand wild geese. In fact, the most wealthy and productive land in the state of Illinois was covered with water, and those conditions, gentlemen, would exist to-day if it had not been for you men who made the tile that drained the water off.

It is a pleasure for me to welcome a body of men who have done so much for the state of Illinois and to have you meet here in your convention in our twin cities. It seems that you have the habit of doing it, and I sometimes think that the University of Illinois has something to do with that question; if so, I can compliment you upon your business sagacity in coming to a university that is in touch with the people and whose purpose is to teach men in every line of trade to make that degree of advancement that tends for the betterment of mankind in every respect.

The University of Illinois in its early history was an agricultural college. That idea seemed to prevail all over the state, but it did not seem to win. They then started into other branches and made it like the other colleges of the United States and the Eastern colleges. Yet, when it comes right down to the essential things of to-day, the University

of Illinois has found out that agriculture taught in its most intelligent form is one of the most important branches, and for that reason we appreciate what the University of Illinois is doing for our great state in the line of agricultural work, of teaching our citizens how to be better farmers and how to get better results from the soil. They have also found that it is necessary, in order to farm this high-priced land of \$175 to \$200 an acre to know the ingredients of the soil, to know what it lacks in order to produce the greatest results. The purpose of the institution is to make it an institution of the people and for their common good.

Gentlemen, we take it as a compliment on your part that you have placed at the head of your association such a man as our honored John W. Stipes. "Our John," as we call him. As I look around over these faces here it seems to me that you men are a good deal like John Stipes. John is one of the men that, whatever is coming to him, he wants it, and he has got the brains to get it, and we want him to have it. He goes at everything in that easy and yet affective way. He doesn't tear the world all to pieces, and yet you follow him right along in his line and you will notice that he makes things come. Gentlemen, it is the man who has the purpose in his mind to start out, and having an end in view to go right forward steadily day after day and bring to his support all the help that he can get from every source. It is the man who does business in that way who does something, and I believe that John W. Stipes to-day or in the future can have almost any office we have here. He would make a good congressman, but on the other hand he would run against our Bill McKinley, so I know of no way of disposing of the two in a pleasanter manner than to make McKinley the president and John Stipes secretary of state. (Applause.)

Gentlemen, on behalf of Champaign and Urbana—I say Urbana, because we are but one city, we are working here for the public good, for the good of the state of Illinois and for the University of Illinois—in the name of these twin cities, gentlemen of the Clay Workers Convention, I welcome you. (Applause).

Mr. Atkinson's address was responded to briefly by Mr. Harry de Joannis, of Chicago, who said that the members of the association had a deep interest in the University of Illinois; that they had reaped substantial benefits from it and he believed that the founding of the Ceramic School had been and would continue to be a benefit to the state and to the members in succeeding years. Mr. Atkinson's words

of welcome were deeply appreciated by the members of the association, who were all glad to find themselves back in Champaign for the third consecutive meeting.

Mr. Stipes. According to the program I am now to make the President's address, but I am going to use the authority that was vested in that office and get "Grandpa" Beardsley to say a few words for me. I introduce to you Mr. George F. Beardsley. (Applause.)

MR. BEARDSLEY'S ADDRESS

I don't know whether I can speak loud enough in the few words that I say to make you boys on the back seats hear me. If you sit back there, I take it for granted that you don't very much care whether I make myself heard or not.

With a good deal of laughter the members moved forward and occupied the vacant front seats.

If you look on your program you will see that I am only a substitute. I occupy this place because I was ordered so to do. I recollect that when we went into the army, as many of you did when you were soldiers, the first thing that we had to do was to learn to obey orders. That was our first duty and I have followed that principle ever since. I say to you truly that it is embarrassing for me this afternoon to stand before you in the relation that I do. Yet I am well assured that I am not as much embarrassed now as I will be when I bow myself away. But as I said before I feel that it is a duty to do as my boy here (referring to Mr. Stipes) has commanded me, and this calls to mind a little incident in the life of my father which he used to tell to us boys with a good deal of gusto. I find that I have something of the same kind in my makeup. My father was a boy on a farm. His father was a revolutionary soldier and my father was a very poor boy. In the course of his farm work he had to ride an old mare that was hitched on before the yoke of oxen to do the plowing. In fact I used oxen until I was 21 years old. Down on Long Island Sound on the farm where my father worked, one day a sailor came up to the house and asked the man who owned the farm if he did not want to hire a man. The farmer asked him if he could plow? Oh yes, he could do it or anything—plow just as well as anything else I expect. So the sailor was given the oxen with the boy and the old mare to go down into the field to plow. If any of you have ever driven oxen you know that sometimes the oxen have a way of turning the yoke. Any man who has driven oxen knows that. The sailor had been down in that field only a little while when he came running up. The old gentleman said to him, "What is the matter?" "Why," the sailor answered, "the larboard ox is on the starboard side and the old mare has followed the rigging and they have all gone to Davy Jones' locker." (Laughter and applause.)

Those of you who know me and know what a ruddy-faced sort of a fellow I used to be know that I have been sick for the last three weeks. But I will make the effort to-day.

If I were competent to say what I would like to hear said by one of you who is competent, even then I would hardly know where to begin.

I think I realize that the speaker in the brief time that he occupies the stand is expected to say something that will amuse, entertain, or instruct, but I can easily believe if you want anything from me, you want myself, and I want you. You want to treat me courteously and I want to say to you, not to the world outside, something that may be helpful to you in the now and in the oncoming years.

I shall not insult the editors, the compilers of these trade journals by permitting them to say, when I am through, the old gentleman has not only gathered his inspirations

but his subject matter from our publications. Neither would I cast the odious reflection that you, my friends, might not detect the plagiarism for I realize that you are, and ought to be, not only readers but subscribers to these journals. If you have read as you ought to have done in the past year you know where we are to-day. And you that may have been a little pessimistic at the beginning of the last year, are now rejoicing over the manifest prosperity. Neither should I if I could anticipate the report of those who were appointed for special work.

But the outlook, the planning for the future is a common field. The demand for material and for labor along the various lines represented by you have never been greater.

Because of the fact that our forests are rapidly diminishing and that we are compelled to supply the increasing demand for building material from the rocks and from the bowels of the earth it admonishes us that *our* work must increase. A display of inventive genius is certainly opportune. Hence the great demand for men. When John Ruskin said "Life without industry is guilt, and industry without art and education is brutish," it is not probable that he had in mind the Clay Workers Association of Illinois. John Ruskin according to my memory was born three years earlier than I. The life of this organization I understand to be twenty-nine years, so it is possible that John made the assertion about the time of your organization. John is dead, but if he were living I do not doubt he would say "Boys you have done well." To note the *advance* in the art of manufacturing one need to but step just across our county line to the little town of Danville and spend a day with our industrious, educated, educating artistic neighbor. Brother Butterworth. If you ask me "Beardsley, do you associate clay workers with artists?"

When God said "Let us make Man in our own image, and the Lord God formed Man of the dust of the ground." The clay working was then in its infancy.

If you ask me, "Do you not believe in Evolution?" Yes, and it is a pleasant pastime to follow the evolution from the time that Nimrod ceased work on his tower because of the confusion of tongues, and down the ages to the time that the Pharisees required of the Israelites more brick with less straw, on down to the time that I followed the oxen around in the mortar bed, then the gum, with a capacity of 100 brick per day, and on and on to the Butterworth Machinery making brick faster than you can count them.

And if you ask me, "Has the Evolution for the betterment of manhood kept pace with the betterment in brick making?"

I hope so, but possibly not so distinctly perceptible. I am aware that ours is a clay workers association and that clay working and its kindred associations is voluminous enough to occupy all of our time during the three days that we remain together. The program is ample and I would be a trespasser if I should attempt to anticipate, which I shall not do.

But the Man is so important a factor, that I feel warranted in giving expression to a thought on this topic.

The perfection of Manhood is the goal upon which our eyes are fixed at the End of the race. The industries, the arts, the sciences, the accumulations of wisdom, of money, of houses and lands, unless they can be used for the furtherance of this purpose, should not be eliminated but brought under the ban of a law analogous to the pure food law.

As we are prosecuting our searches and our researches for the best material in our various lines in our association work so we want the best prepared material in our making of manhood. We want good laws, hence good men for our law makers. We almost make the laws in the selecting of the law makers. Our senator for this senatorial district

said to me recently, "I never vote for the enacting of a law without considering it from the standpoint of the making a better manhood."

We want good looking men. I shall not take the time to define just what I mean by a good looking man. I presume I give to the phrase the same meaning that you give. When your president and myself had completed the Hotel Beardsley, the decorator of the walls, a Mr. Schwobacker, said to us, "Gentlemen, now will you tell me why I got this job? If you tell me, may be I could get a job somewhere else. Was my designs better than those of my competitors?" I said to him, "No. It is not so much that, but we like the man better than the other man. (Laughter.) He said, "I don't know whether that would help me in other places." But it did help him to get a good many other jobs that we happened to know of.

The clay worker should be in love with his choice of vocation, and with his co-workers. He should be an optimist, one who sees the possibilities in advance of every great work undertaken. And to go slow. I need not speak of this. Instances of coming up rapidly to confirm this statement that I make, that we try to go along too fast. Go slow. Know when you start out what you have in view.

Perhaps I am inclined to talk about men and women more than I am about brick and cement and tiles; I don't know as much about those things as I do about men, and there are many of you who know more than I do about the bricks. But there is not any of you who have been associated with men and women as long as I have. A woman has been training me now for 53 years. (Laughter and applause).

Two years ago, as your president will remember, a number of us were over at Springfield and we left the capitol about dinner time. There was the President of the University, the President of your Association, Congressman McKinley, and there were two or three of those from the University, whom they call the professors. We were all going to dinner. Dr. Converse, who most of you know, was invited to go to dinner with the rest of us. "No," he said, "he guessed he wouldn't go." He said, "This is the anniversary of my wedding day." I don't remember how many years he had been married; fully forty years, I expect; maybe more than that. I walked along with him a little ways, in hope that he would invite me to go to his house to get a drink of water. I wanted to see that woman of his, if he was going to sit down with his wife instead of going to the Leland with the company that he had been in.

I tell you, when you find men of that kind you find good men every time. He might make some mistakes. Men are making mistakes all the time. I would not make a good judge. I would turn some of those men who have made some of those mistakes free and let them try once more. (Applause). I would not be worth a cent as a judge on the bench. I do not believe much in punishment. I am talking about young men. If I should say something that seems to be egotistical, don't call me down. This will be the last time that I shall probably ever bother you. It is as important that you assist your wife in bringing up the family as it is in arranging your brick kilns. You probably won't get any credit for doing it from your wife. She won't give you any credit. I have some boys. One of my boys is the chum of John W. Stipes. John loves Henry and Henry loves him. Henry is the mayor of Kansas City. No man in Kansas City, I believe, is more beloved than he is. I think that he is a man. But I don't get any credit for it. It belongs to my wife. Let her have the credit if she wants it. (Applause).

In imagination you see the completion of the Panama

Canal, of the wall across the head of the Niagara River to raise the surface of Lake Erie, and the great good to the present and to future generations.

The pessimist replies, "Thebes thought so once, so thought Palmyra. Where are they to-day?" I don't know." Shakespeare, in a burst of inspiration says, "There is a divinity that shapes our ends, rough hew them as we may."

This association is made up largely of men who are over other men. The man who has so controlled himself that he can happily control a body of laboring men, has an enviable accomplishment.

Some fifteen or twenty years ago when your president was a salaried laborer he pasted over the side of my desk in my office, which is discernable to-day, this motto, "Pull with the tide, pulling against the tide gives oceans of exercise, but very little of the stuff that builds brown stone fronts."

Be not envious of your neighbor who may have chosen the same, or a different occupation from yours and seemingly been more successful than you. There are very few men that could be Rockefeller or Harriman if they would, and but very few that would if they could. It is possible for the man at the little ceramic plant over at the university, to be as the man at the head of a steamship subsidy. I think there has never been a time in the history of America when there has been one-half as much suffering, as within the past five years by men who could not be content to go slow.

Friends, let us be glad that there is work for us to do; others have built the houses in which we live, the churches in which we worship, the roads by which we travel. We are the heirs of the past.

Gentlemen, I say once more, go slow. Even if you don't get so much money, go slow. It is not likely that you will lose so much either. After all, the great and important thing is to make men of yourselves and of your children.

I thank you gentlemen for bearing with me this time. (Prolonged applause).

President Stipes: Attention of the members is called to the question box that stands on Secretary Hartwell's desk. Any one who wants a question discussed should write it down and put it in the jar, and the questions will be taken up for discussion at some convenient time. The first on the program is "A report of what had been accomplished during the past year in the School of Ceramics, of the University of Illinois," by Professor Charles W. Rolfe, director of the course in ceramics.

REPORT OF WORK DONE IN THE DEPARTMENT OF CERAMICS.

Brief statement of what has been accomplished by the Department of Ceramics during the last one and one-half years.

As soon as notice was received that Governor Deneen had signed the bill which made provision for instruction in ceramics the University began its search for a competent man to take charge of the technical work. It was thought that the preparation of the man appointed should combine a full course in some reputable college, successful experience as a teacher, and technical training in some well equipped clay working establishment.

It soon developed that there were but three or four such men in this country, and but very few in England, France or Germany, and that all of these were employed at salaries far greater than we could hope to pay. After modifying our demands several times without finding a man to meet

them, Mr. Ross C. Purdy was appointed late in September, he being, all things considered, the best man who could be obtained. He began his work October 1, 1905.

Up to this time we had refrained from making any purchases of apparatus or laying out detailed plans for work, believing that the appointee should be consulted in all such matters. Consequently preparation for work really began fifteen months ago; and much of this time was consumed in the selection, purchase and installation of our equipment, so that research work did not really begin until late in the spring of 1906.

Instruction was offered to students at the opening of the second semester, at which time also Mr. Junius F. Krehbiel began work as an instructor.

Three students entered the course and carried their work through the second semester. This number was increased to nine at the opening of the fall semester. We have now two juniors, one sophomore, and six freshmen. Permit me to say that this is a better showing than any school in this country has made in the time.

In the line of investigation we have now practically ready for publication a report in the Paving Brick Industry of Illinois, containing chapters on The Geology of Clays; The Geological Distribution of Paving Brick Materials in Illinois; Studies of Illinois Clays Now Being Used for the Manufacture of Paving Brick; The Construction and Care of Brick Pavements; and Tests which Should be Applied to Paving Brick. This report was prepared for and under the auspices of the Geological Survey by the staff of the department assisted by other departments of the University.

Besides the above search was made in the most promising portions of the state for fire clays and a considerable number of those tested prove to be of good quality. In this case the field work was mostly done by geologists employed for the purpose, the analyses were made by the chemical department, but the testing was done by the department of ceramics.

In addition to the above the department has undertaken several investigations for its own account which will be published in the series of bulletins issued by the University.

The first of these, The Course of Efflorescence on Brick Structures, by J. C. Jones, is now ready for distribution. It is a bulletin of 18 pages and has been highly commended by those who have seen it.

The manuscript for a second, Limits of Variation in Composition Heat Treatment of White Ware Glazes Using a Constant Combination of Fluxes, by R. C. Purdy and H. B. Fox, is now ready for final revision. Up to the present no recorded attempt has been made to ascertain the limits between which each of the elements entering into the composition of a white ware glaze may be varied or the range of temperature in which such glazes will mature properly. In the preparation of this bulletin a method by which this might be accomplished was devised, the necessary calculations made, glazes of varying composition compounded and fired at different temperatures. Over 2,200 test pieces were used and the results charted in a series of graphic tables which show the ranges of variation nicely.

The manuscript for a third bulletin is nearly ready. This is a study of crystalline glazes. Manufacturers of art pottery are much interested in the production of crystalline glazes, but up to the present no attempt has been made to ascertain the effect of variations in composition on the formation of crystals. The formulas used were empirical. The underlying principles were not known. In the studies upon which this bulletin is based, 1,800 glazes were compounded and trial pieces burned. The results were charted with necessary descriptions and the charts show graphically the limits between which crystals may be expected to appear

in the glaze. The bulletin will probably be followed by others touching other parts of the field.

The manuscript for a fourth bulletin is practically ready. It is a study of the pyro-chemical behavior of clays. That is a study of the reactions which take place in clay during burning and the physical effects which these changes have upon the structure of the clay. This is a subject about which little is really known, and the present bulletin is intended to be the first of a series.

The studies for a fifth bulletin have been completed and the manuscript is now being prepared. It deals with the effect of alternate freezing and thawing upon brick. The brick for these studies were frozen and thawed quickly many times and the effects of these sudden changes upon the brick carefully noted.

Other studies are in progress.

During the remaining six months of the biennium we hope to complete several other helpful studies. Among them are investigations of the properties of those dense clays which give so much trouble in drying. For this purpose I would like to ask any members of this Association who can obtain for us 200 pound samples of such clays to give me their addresses with all facts at command in reference to the occurrence of these clays and their behavior.

I shall also be grateful if any member of the Association who has a problem or problems in mind whose solution he thinks will be helpful to clay workers at large, will write me concerning them. Such a list would help us to decide what investigations we would best undertake during the coming year. Of course it is understood that these would be suggestions only, and that many of them would be entirely beyond our reach, but they would help nevertheless by indicating the difficulties which manufacturers have to contend, and so enable us to make our work helpful to practical men.

At your meeting last winter a resolution was passed asking us to arrange for our institute lasting something like ten days either just preceding or following the meeting of the Association, which should be open to all clay workers without fees.

Acting on this request we sent to each member of the Association a letter asking what topics he would like to have discussed at the institute. Perhaps one-fifth of those addressed replied and in nearly all cases suggested "Drying and Burning" as the topics. We have arranged an eight-day program on these subjects.

We consider ourselves peculiarly fortunate in being able to secure the help of Messrs. Richardson and Watts and Professor Bleininger, as well as that of Professors Parr and Watson and Dr. H. F. Bain of the University faculty. I think I may justly say that the clay workers of the state have not often had an opportunity to listen to as reliable and thoroughly helpful a series of lectures as those which will be presented at this institute, and we bespeak for them a generous patronage.

It will rest with you to say whether these institutes shall be continued. The University will make the necessary provision for them year by year, provided the clay workers show enough interest in them to attend. Of course you would not expect us to continue them if the lecturers had to speak to empty seats or to a mere handful of auditors. The future of the institutes then is in your hands.

Last year I called your attention to the need of a reliable list of clay workers and clay-working establishments of the state. We have taken great pains to collect such a list and have nearly a thousand names, but find that the list is wholly unreliable. We have resorted to several schemes in the effort to correct it. First we selected what seemed to be the largest plant in each county and sent to its proprietor a list of all the plants in that county as we had them, ask-

ing him to correct the list. Replies were received from perhaps twenty-five per cent of these persons, most of these coming from counties which have but few plants. Next *Brick* and *THE CLAY RECORD* published special articles and sent sample copies containing these articles to each address, requesting an acknowledgment. Not three per cent of those receiving these paid any attention to the request. We next sent out over eight hundred circular letters stating that we would soon be ready to distribute bulletins containing the results of our work and saying that these would be sent to those replying to the circular. Something over two hundred replies have been received. As the other six hundred were in return envelopes, they must have reached their destination. I state these facts, not as a complaint, but in order to show you that we need your co-operation in this matter. Can you not devise some way by which we can secure a correct list of the clay workers in your vicinity? Would it be asking too much if we requested each member of the Association to make for us such a list for his part of the state covering one, two or three counties?

In regard to plans for the future, we need a laboratory something like 60x120 feet which can be erected at a cost of about \$10,000 with an equipment of heavy machinery costing from \$2,000 to \$3,000. We need, also, to increase our force of permanent workers, and the salaries of these men, together with the expense of carrying on the investigations, we estimate will require \$6,000 to \$6,500 per year. These sums we have asked your legislative committee to arrange for, if possible.

Now, gentlemen, we have endeavored to set before you fairly the things which we have done in the last year and a half, and we have told you not all of our troubles, but those only which we think you can help us to overcome. We leave it for you to say whether the end has justified the means. Whether the results of our work contain enough of promise to warrant the labor and self sacrifice which will be involved in your continued co-operation.

President Stipes: I would like to hear some remarks from the members on the subject. Mr. Barr, tell him why you did not answer his letter.

Mr. Barr: I don't know; I guess to a certain extent I will have to plead guilty. I think perhaps we did answer the letter that we got, but I don't think that we had very much information. So far as the different clay plants are concerned in the county in which I am, I could not give them to you. There are several plants in the different parts of the county, but I don't know what their addresses are. Our line is a little different, so that we don't meet them. We don't make tile. It is all paving brick. I think I could give you the address of every paving brick plant in the state, but the tile plants I don't know. That is why I didn't respond to that.

President Stipes: I beg your pardon, I didn't know but what may be you had answered the letter. (Laughter.) Mr. Hammerschmidt, how is it with you?

Mr. Hammerschmidt: I think I responded. I know that the list was correct as far as our county was concerned that was asked for. I think the only way to get the correct list is to get it from the machine men. They have a correct list of every tile and brick factory in the state—only they won't give it away. (Laughter.)

Mr. Stoll: I have had a good deal of experience in writing to clay workers. Being over in Ohio some time ago I wanted the names of clay workers in the different parts

of the United States and the most successful way that I found to get those was to write to the banks in the town and put a postal card in my letter and say to them, "Kindly give me the names of all clay workers in your town, of whatsoever kind." I have invariably got a reply. But I have written to clay workers in the seventeen years that I was secretary of the Association and I will say that I did not get a reply to a third of the letters I wrote. Therefore, when I got up a program I would say, "you are on the list for a certain kind of a paper." They didn't reply, but that didn't make any difference with me. I took no answer for an acceptance.

President Stipes: The next subject on the program is "The Economic Value of Illinois Coal." By Lester P. Breckenridge, Professor of Mechanical Engineering, U. of I.

THE ECONOMIC VALUE OF ILLINOIS COALS.

The state of Illinois is singularly favored in all the conditions requisite for a rapid and permanent industrial development. It has a vast area underlaid with productive coal seams, which afford an abundant supply of bituminous coal of good quality. With the Great Lakes on the north-east, the Mississippi river on the west, and with a network of railroads having an aggregate length of nearly 12,000 miles, facilities for transportation are unexcelled. Illinois is also fortunate in its large area of arable land of extreme fertility. In view of its cheap and abundant fuel and its unexcelled facilities for the transportation of raw material and finished products, it is not surprising that Illinois has pushed forward rapidly in manufacturing and allied industries.

The slow but persistent advance of the center of population of the United States presents some interesting problems for the student of Economics. Beginning near Washington in 1800, this path has held its course almost due west, passing into West Virginia in 1820, into southern Ohio in 1850, nearing Cincinnati in 1870 and crossing into Indiana about 1880, reaching in 1900 a point a little south of Indianapolis. At the present rate of extension, this path of population center is due in Illinois about 1930.

We cannot here dwell on the thoughts that present themselves when we contemplate those conditions which always precede the pushing forward of the lines of population into a new country. The primitive pursuits, hunting and fishing, the clearing of forests, the preparation of roads, grazing of herds, agricultural pursuits, all have their place in the march of progress.

Another path is now wending its way westward. This path is a few hundred miles north of the one just considered, and naturally its present western terminus is a few hundred miles behind. The path of the Center of Manufacturing is now in mind. According to our first definite information, it began in 1850 near Harrisburg, Pennsylvania. It took thirty-five years before it crossed into Ohio, but by 1900 it was nearly half-way across that state and on its way toward Illinois. Since 1850 the growth of manufacturing in Illinois, measured by the value of the manufactured product, has been at an average rate of one hundred per cent a decade, and the rank of the state has advanced from fifteenth to third. This rate of advance is merely typical of the development in other industrial lines.

All these facts have an important bearing upon our subject, "The Economic Value of Illinois Coals." In a few years the American people and American engineers will have completed the Panama Canal. The markets of South American republics should by that time be open to American products and American ships should be ready to convey

our products to them. Open very wide must stand the doors of the Orient if through them, too, shall pass the various products of American industry which they will surely come to demand and which we should be prepared to supply. Looking to the west and southwest, soon vast acres of now arid plains, yielding to our foresight and enterprise, will burst forth into fields of waving grain and bountiful orchards of fruits. When we cast our eyes upon the map of the states, when we weigh the advantages of our section, already cited, we cannot escape the conviction that in the years soon to come, the industrial activities of the central Mississippi Valley will enlarge and grow far beyond the thought of that great mass of our population dwelling on the plains, and perhaps even beyond the dreams of those who occasionally have dared to climb the heights and peer into the future. In the midst of all these mighty forces, working to compete the picture which I have held up to you, stands our Illinois, even now justly proud of its fertile fields, its rich mines, its many miles of railways, its varied industries and its intelligent people.

What of its future? All its present advantages will be developed and improved. Our soils under scientific treatment will produce more and still retain their fertility; our mines will produce more, waste less and improve their products for economical use. Our people, freed from many of the tasks and hardships of pioneer days will have more time to cultivate those qualities of mind and soul which were so often left without a fair chance in the days when our temporal needs seemed to demand all our energies.

And our industries,—what of them? As the Indian sought the forest and stream abounding in game, as the farmer seeks the large and fertile fields adjoining markets that require his products, so, too, does the manufacturer seek the locality of dense population for his labor, of cheap fuel for his power and accessible markets for his products. All of these Illinois now has and will continue to have in increasing measure. The unparalleled resources of Illinois, if properly exploited, should make it the greatest producing and manufacturing state in the whole Mississippi Valley. Ships passing through the Panama Canal should be laden with Illinois manufactures bound across the Pacific or to the South American ports. The coals of Illinois should warm the homes of the Northwest. Transcontinental trains should convey our food products from the Atlantic to the Pacific or en route for the Gulf ports.

I have endeavored to point out what appears to be the wonderfully favorable position of Illinois in its relation to the great industrial activities of the country. Taking into consideration *the following facts*, it must be very evident that the coals of Illinois will continue in great demand for supplying sister states, for its increasing transportation, of which its rapidly growing electric lines will be no small factor, and for its great manufacturing industries. The demand for its fuel will determine its greatest economic value. These pertinent facts are that outside of Pennsylvania, which is preeminently the first state in coal mining, Illinois leads in the production of coal, yielding about 10.4 per cent of the entire quantity mined in the United States, while in the same year all of the states west of the Mississippi together produced but 12.2 per cent, so that to Illinois should naturally fall the privilege of supplying a generous share of the fuel of the nation. Apparently Illinois will soon produce quite as much coal as all the states west of the Mississippi.

The coal deposits of Illinois are included in the eastern interior coal field of the United States, which covers western Indiana, nearly the whole of the state of Illinois, and western Kentucky. Illinois has the largest coal-bearing area of any state in the Union, about two-thirds of the state, or upwards of 37,000 square miles, producing coal.

A medium grade of bituminous coal is mined, suitable for the production of power, being used mostly as a steaming fuel by railroads and manufactories. The following table shows the production of coal in the leading coal states during 1902 and 1903:

Production of Bituminous Coal in the United States.

Rank	State	1902	1903	Increase
1	Pennsylvania	98,946,000	103,000,000	4.
2	Illinois	30,031,000	34,955,000	15.
3	West Virginia	26,162,000	26,882,000	2.7
4	Ohio	23,929,000	24,573,000	2.6
	United States	258,372,000	277,077,000	6.7

The following statistics for the year ending June 30, 1903, will give an idea of the magnitude and importance of the coal industry in Illinois: During that year there were 935 mines in operation, giving employment to 35,000 miners and 15,000 employees other than miners. The total product was thirty-five millions of tons, valued at more than thirty-six millions of dollars at the mines.

It will be interesting in this connection to note the world's coal production in 1904, and to learn that the United States produced 36 per cent of the world's total output of that year.

World's Production of Coal in 1904.

Country	Short Tons	Per cent
United States	352,314,270	36
Great Britain	260,312,640	27
Germany	186,731,996	19
All others	178,728,835	18

Total	978,087,741	100
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THE CHARACTER OF ILLINOIS COALS.

The State Geological Survey is doing important work in determining the location and extent of the various seams, usually referred to by number, which at present are hardly of more than local significance. As a rule the best coals are those from the lowest seams. At present seam No. 6 is the most important producer.

In chemical composition Illinois coals are usually somewhat higher in volatile matter than the coals from the eastern fields and this for many years gave difficulty in burning it with the best economy and without smoke. At present no such difficulty need exist, as it has been and is being demonstrated that Illinois coals can be burned with good economy and without smoke, at least in properly constructed furnaces under stationary boilers. As illustrating approximately the chemical composition and heating value of Illinois coals, the following table is submitted:

Proximate Analysis—Air-Dry Coal.

(From inspection of 350 analyses.)

	Varies from low value to high value		Average
Fixed carbon	35%	55%	45%
Volatile matter	30%	40%	35%
Moisture	4%	12%	8%
Ash	4%	20%	12%
			100%
Sulphur	1%	5%	3%
Heat units, per pound	10,500	14,000	12,850

This table was made by inspecting the results of about 350 analyses recently published by Prof. S. W. Parr, from the Laboratory of Applied Chemistry of the University of Illinois.

THE USE OF ILLINOIS COALS.

More has been done during the last three years to determine the conditions under which Illinois coals can be burned with economy than during all the preceding years. The agencies which have been active are:

(a) United States Geological Survey at the Fuel Testing Plant at St. Louis

(b) Engineering Experiment Station of the University of Illinois

(c) Private enterprise

(a) The results of the tests made by the United States Geological Survey at St. Louis are published from time to time and cover tests made on coals from all parts of the United States. Coals are tested here by various divisions as follows:

(a') Under steam boilers

(b') In gas producers

(c') In coke ovens

(d') By briquetting

(e') By complete chemical analysis

A most valuable work is being done at this plant and the results obtained will have an ever-increasing value. It is unfortunate that the results have not been more promptly published and placed before the public. The reports relating to this work may be obtained by applying to any Congressman or to the Director of the United States Geological Survey.

(b) Realizing the importance of more extended information relating to Illinois coals, the Engineering Experiment Station at the University of Illinois has purchased and installed a plant designed especially for conducting a series of fuel tests of Illinois coals. The plant consists of a 210 H. P. Heine water-tube boiler, together with a Green chain grate stoker and a Sturtevant economizer and induced draft fan and engine. This boiler is a duplicate of the boilers used by the United States government in the fuel tests at St. Louis under the direction of the United States Geological Survey to which reference has just been made. It was thought that in this way the fuel tests here at the University would be in a measure comparable with the tests made by the government on coals from all parts of the United States.

The rapid growth of the industrial interests of Illinois demands a careful study of the great fuel supply, and no effort should be spared in the introduction and promulgation of improved methods and processes in the production, treatment and consumption of its coal. In the tests of Illinois coal, which it is now proposed to make, less attention will be paid to routine boiler tests, familiarly known as such, and more attention will be given to a scientific study of fuel treatment before burning and to a study of those furnace constructions and conditions which give promise of maximum results. In order that future tests may be conducted along lines which will meet with the general approval of the various interests of the state, a Conference Committee on Fuel Tests has been appointed, consisting of the members named below and representing the organizations indicated:

H. Foster Bain, Director State Geological Survey, Urbana, Ill., representing the State Geological Survey;

A. Bement, Consulting Engineer, Chicago, the Western Society of Engineers;

Edwin H. Cheney, President Fuel Engineering Company, Chicago, the Building Managers' Association of Chicago;

F. H. Clark, Gen. Supt. Motive Power, Burlington Road, C. B. & Q. Ry., Chicago, the Western Railway Club;

Adolph Mueller, President H. Mueller Mfg. Company, Decatur, Ill., the Illinois Manufacturers' Association;

Carl Scholz, President Coal Valley Mining Company, Chicago, the Illinois Operators' Association;

A. V. Schroeder, Decatur Railway and Light Company, Decatur, Ill., State Electric Light Association;

Wm. L. Abbott, Chief Operating Engineer, Chicago Edison Company, Chicago, the Board of Trustees, University of Illinois;

L. P. Breckenridge, Director Engineering Experiment Station, University of Illinois, Urbana, Ill.

Reference has been made to the government fuel tests at St. Louis. It should be stated that the work of the boiler division of these tests has been carried on under the direction of the Director of the Illinois Engineering Experiment Station, who will also have charge of the tests made at the University of Illinois. The chemical division of this work will be under the supervision of Prof. S. W. Parr, of the department of Applied Chemistry, who has already done work of great value to the coal industries of the state.

It is hoped that mine owners and manufacturers will find it advantageous to co-operate with the Engineering Experiment Station in the proposed tests. The Station Staff will always be glad to receive such suggestions concerning this work as those interested may desire to offer.

(c) The results of the work of private enterprise are not always made available by publication. Much that is valuable, however, is being done. During the year important papers have been presented in the *Journal of the Western Society of Engineers*, one by Mr. W. L. Abbott on "Some characteristics of coal as affecting performance with steam boilers," and one by Mr. A. Bement on "The suppression of industrial smoke with particular reference to steam boilers." These papers were extensively discussed and the papers and discussions are worthy of careful study.

ACTUAL TESTS OF ILLINOIS COALS.

For the purposes of this paper, it has seemed sufficient to give only a few of the leading items from the results of tests made with Illinois coals. In the table following are given the average results of fifty-four tests, the ten highest tests and the highest single test of the government fuel testing plant at St. Louis. These tests are all hand-fired on a plain grate and under a standard Heine water-tube boiler of 210 H. P. In commercial plants where these results are not attained, it would be well to examine the installations and seek for improved conditions. From an inspection of many tests it would almost seem an established fact that for usual conditions, proportions and hand-firing, the best economy will be obtained when burning 20 pounds of coal per hour per square foot of grate area.

Results of steaming tests of Illinois coals by the boiler division, United States Geological Survey at St. Louis, under a 210 H. P. Heine water-tube boiler, all coals hand-fired.

Average Results of Fifty-Four Coals Tested.

	Average of best test	Average of 54 tests	Highest
1 Pounds of water evaporated per pound of dry coal (from and at 210°).....	7.53	8.51	9.08
2 Pounds of coal burned per square foot of grate surface per hour	22.5	20.66	19.63
3 Average temperature of escaping gases..	560 F.	534 F.	585 F.
4 Percentage of heat in the coal absorbed by the boiler	61 %	67.04%	69.36
5 Per cent. of ash in coals	15 %	11.28%	10.23
6 Per cent. of sulphur in coals	3.60%	2.84%	1.94
7 Heat units in coal per pound	12,250 Btu.	12,622	12,374 Btu.

From Mine No. 7, Big Muddy Coal and Iron Company, Herrin, Williamson County, Ill.—a mixture of lump and egg made by passing run-of-mine over a 3-inch mesh.

A series of steaming tests of Illinois coals has been conducted by the Mechanical Engineering department at the University of Illinois, extending over a period of ten years, 1895 to 1905. These tests have been made under both horizontal tubular boilers and water-tube boilers, on plain grates and on several types of stokers. In most cases these tests, have been made under every-day operating conditions. Of these tests 162 have been selected as most satisfactory, and the leading results have been grouped in Table I which follows. In column 70 of this table, are the figures generally desired for comparative performance. Attention is called to the arrangement under each type of "boiler and grate" of three bracketed results, viz., *the average of all tests; the average of the best ten; and the best single test.* A careful study of this table reveals the fact that in it are the average results of a large number of trials, for instance, there are 46 trials on chain grate stokers, under water-tube boilers, etc.

In using coals high in sulphur it has been found necessary to keep the engine cylinder comparatively hot, the jacket water usually leaving at about 180° F. The sulphur apparently burns in the cylinders adding its energy to that of the gas. No deleterious effects have thus far been observed in the valves or cylinders.

WASHING AND BRIQUETTING COAL.

Large sums of money have been expended for plants for washing Illinois coal. The object sought by washing is the removal of the ash and sulphur. The results of the washing are various. The ash content is reduced anywhere from 3 to 12 per cent., and the sulphur content is reduced from .5 to 2 per cent. Any ash left at the mine is a distinct gain, as it does not involve freight or other handling charges. The washing process, however, entails a loss of some coal washed out with the ash reaching from 6 to 15 per cent. But few satisfactory tests have yet been made to compare the relative evaporative efficiency of washed and unwashed coal

COMPARISON OF RESULTS OF BOILER TESTS WITH ILLINOIS COALS ON HORIZONTAL TUBULAR AND WATER-TUBE BOILERS

Type of Boiler and Grate	No. of Tests Aver.	No. of Coals Aver	Aver. Force of Draft	Aver. Flue Gas Temp.	Dry Coal per sq. ft. of Grate Surface Per hr.	Horse-power		Equiv. Evap. F. and A. 212°			B. T. U. Per lb. of Dry Coal	Eff. of Boiler and Grate
						Develop'd by Boiler	Per cent of rating Dev'p'd	Per sq. ft. of Heating Surface per hr.	Per lb. of Dry Coal	Per lb. of Combustible		
A. S. M. E. Code No.			12	21	48	65	67	64	70	71	50	73
1 Water-Tube Roney stoker	9	5	.214	605	22.7	305	105	3.57	7.32	8.53	13034	54.2
	9	5	.214	605	22.7	305	105	3.57	7.32	8.53	13034	54.2
	Highest Single	1	.166	656	26.5	....	132	4.55	7.75	9.21	12364	60.5
2 Water-Tube chain grate	46	9	493	521	27.2	180	98	3.43	6.29	7.82	11562	52.5
	10	4	571	507	26.1	202	106	3.76	7.33	9.01	11821	59.9
	Highest Single	1	.710	592	23.9	....	109	4.18	7.66	9.64	11067	66.9
3 Hor. Tubular rocking grate	6	4	.323	473	20.5	121	113	3.70	6.81	7.95	11809	55.7
	6	4	.323	473	20.5	121	113	3.70	6.81	7.95	11809	55.7
	Highest Single	1	.257	519	18.2	117	117	4.00	7.38	8.30	11250	63.4
4 Hor. Tubular plain grate	45	10	.267	534	11.5	45	95	2.45	6.38	7.48	11532	53.4
	10	5	.354	542	13.4	52	123	3.16	6.91	7.85	11797	56.6
	Highest Single	1	.405	549	13.6	....	130	3.37	7.05	7.78	11430	59.6
5 Water-Tube plain grate	39	19	.400	509	20.6	176	79	2.62	5.75	6.67	11608	47.8
	10	4	.404	552	21.6	220	92	3.28	6.64	7.85	11728	54.7
	Highest Single	1	.790	616	25.1	507	98	3.38	6.85	8.39	11427	57.9
6 Water-Tube Murphy Furnace	18	5	.530	488	18.3	189	76	2.53	5.87	6.64	.....	....
	10	4	.516	481	19.1	205	82	2.75	6.11	6.92	.....	....
	Highest Single	1	.580	481	18.4	205	82	2.76	6.36	7.09	.....	....

ILLINOIS COALS IN POWER GAS PRODUCERS.

During the year (1906) many kinds of Illinois coals have been used with entire success in the gas producer tests in progress at St. Louis. Even coals high in ash and sulphur, which some have thought impossible in gas engine practice, have been found to give but little trouble. In one test, Illinois coal, furnished by Donk Brothers, from South Illinois mines, was used for a continuous run of 23 days in a Taylor gas producer, and gas was furnished a 235-H. P. 3-cylinder (cyl. 19x22) vertical Westinghouse gas engine which delivered during this period 220 H. P. on an average coal consumption of 1.7 pounds per engine horse power hour. In gas producers, the following are a few of the results obtained with Illinois coals, the average duration of these tests being 50 hours.

TESTS BY GAS PRODUCER DIVISION OF THE U. S. GEOLOGICAL SURVEY FUEL TESTING PLANT AT ST. LOUIS IN 1906

	Slack	ILLINOIS COAL, Egg and Nut	Lump
1 Average B. t. u. generated per cu. ft. of gas.	130	147	150
2 Pounds of dry coal per electrical horse-power at the switchboard	2.53	1.75	1.58

of the same sizes. Experiments now in progress by the Engineering Experiment Station will, it is hoped, shed some light on this subject.

Briquetted coal is very generally used abroad by locomotives, industrial and domestic concerns. The price of coal in foreign markets renders necessary the utilization of all its small sizes. Briquetted coal seldom produces smoke even in locomotive boilers, as recent tests of the C. B. & Q. and the Rock Island roads have demonstrated. The cost of briquetting, \$1.10 to \$1.40 per ton, makes its general use prohibitive as it adds but little to its heating value. We are greatly in need of more information on this subject.

GENERAL SUMMARY.

In this paper three thoughts have been prominently before the writer:

- (a) The great natural advantages, in position, in resources, in population of the state of Illinois.
- (b) The agencies now actively engaged in studying the problems of its fuel location, production and use.
- (c) The results of investigations already made or contemplated by these agencies.

For those who are but slightly interested in the problems here discussed, the few general statements presented below will doubtless be sufficient:

1. In the value of the manufactured product, the following states lead, in the order named: New York, Pennsylvania, Illinois, Massachusetts, and Ohio.

2. *The value of the manufactured products of Illinois in 1905 was \$1,410,342,129, an increase of 25.8 per cent. since 1900.

3. The United States is now producing nearly 40 per cent. of the coal supply of the world.

4. Illinois is now producing nearly 11 per cent. of the coal supply of the United States.

5. Illinois is now producing nearly as much coal as the states west of the Mississippi, taken together.

6. The westward advance of population and manufacturing, the development of the Northwest territory, the irrigation of the West, and the construction of the Panama Canal all mean much more to Illinois and its future industries than a first glance at these activities would suggest.

*Census bulletins No. 52. Census of Manufactures 1905 Illinois.

7. Encouragement and support should be given to the agencies which are working on the problems of the production and utilization of Illinois coals:

(a) The fuel testing plant of the United States Geological Survey.

(b) The Engineering Experiment Station of the University of Illinois.

(c) The Illinois State Geological Survey.

8. Illinois coal when hand-fired (in sizes above $\frac{1}{4}$ in.) should evaporate under fair conditions 7.5 pounds of water per pound of dry coal. Under good conditions 8.5 pounds, and under best conditions 9.25 pounds.

9. Illinois coals with standard automatic stokers using *nut* and *slack* sizes should evaporate from 6.5 to 7.5 pounds of water per pound of coal.

10. Illinois coal can be burned economically and without smoke.

11. Many Illinois coals can be successfully used in power gas producers, and with gas engines now on the market produce an electrical horse-power with $1\frac{1}{2}$ pounds of coal per hour.

12. The washing of Illinois coals has made it entirely satisfactory for domestic use. It can be burned without smoke in furnaces and ranges.

13. Power can be manufactured in this state with Illinois coal cheaper than it can be purchased at Niagara Falls.

14. The special fuel problems of the clay industries are entitled to more consideration than has up to this time been given them.

Mr. Mamer: I would like to ask one question. Our experience has been in burning washed coal and firing it the same as you would fire the common lump, that it will make more smoke than the lump itself.

Prof. Breckenridge: Every kind of coal, whatever it is, needs a particular kind of furnace in which to be burned. You may have to find out what that kind of furnace is but with the right furnace any kind of coal may be burnt without smoke. I expect that you will visit the University while you are here. There we have been burning all kinds of coal in that furnace. You cannot make smoke in it, simply because it is constructed so that smoke is not made. It is a question of construction and operation.

Mr. Mamer: You get the smoke, but you burn it.

Prof. Breckenridge: No. If you once make smoke, you are lost. You must not make it. You must have perfect combustion, and then there won't be any smoke. I cannot answer the question that you ask. I do not know

why your particular furnace does better with one kind of coal than another.

Mr. Talbot: I would like to ask what kind of a furnace, is a down-draft?

Prof. Breckenridge: Yes. The products of combustion will not come in contact with the cold surface of the boiler. So that the products are distilled slowly from the coal. But they do not come in any way in contact with the cold surface of the boiler.

Mr. Talbot: We are operating down-grade furnaces. We have used the washed coal. There is absolutely no smoke at all. While it is higher priced coal, it is cheaper in the long run. In addition to that we use a considerable amount of washed coal. It is high priced coal, but it is the cheapest.

Prof. Breckenridge: I have used the washed coal in my house range for the last three or four years and it never makes any smoke.

Mr. Mamer: I would like to see how he burns his coal in a house range and never makes any smoke. I have spent about three weeks this winter in trying to burn No. 2 washed nut, which comes from the Mount Olive District, without making any smoke. I came very near doing it, but it required more work than I cared to do. The easiest way to burn that coal is to burn it on the under feed stoker principle. But ordinarily in a house furnace you can't do that, or don't do it, at least.

Prof. Breckenridge: I live right near the University. I will take you over and show you. I don't live in Missouri, but I will show you. (Laughter.)

Mr. Pratt: I would like to say, in reply to Mr. Mamer's idea that the reason why the small washed coal is unsatisfactory is because it does not have so much superficial area. That has been my experience. And so far as nut coal is concerned, I think in an ordinary under-feed boiler it will produce more smoke. Where you take the larger size, lump coal, the distillation must of necessity be slow.

Prof. Breckenridge: The construction of the grate will allow it to be very slow.

Mr. Moore: The people of Chicago are having a lot of trouble of that kind. They are changing their furnaces and still make smoke.

Prof. Breckenridge: Nevertheless we have furnaces at the University and they do not turn out smoke. Illinois coal can be burned without smoke. Chicago people either have not the opportunity to put in the right kind of facilities in some of their existing plants, or else they find it is easier to let the coal companies pay the fines.

Mr. Pratt: I had charge of a plant at the Northwestern Station for $2\frac{1}{2}$ years before I went into the brick business. We had a furnace in which you could burn any grade of coal without producing any smoke. We used to catch our fireman once in a while when they were steaming up on the up-draft and then we would have smoke; but when they adhered strictly to the down-draft principle there was no trouble. At times we would use anything to avoid shutting down the plant, and I have seen the scrapings of the mine used. We never produced any smoke except as I say occasionally.

Prof. Breckenridge: Perhaps all of you gentlemen have children that you try to show off once in a while, and at the time that you want them to do something they get obstinate and won't do it. I am always afraid that when we go to look at our University stack it will smoke like forty. But I rather hope that we can get you over there when it doesn't smoke.

The President: Is it possible for a man to take the ordinary furnace that we have under the boilers and so construct it that it will not smoke?

Prof. Breckenridge: You are thinking now of the horizontal tubular boiler. That is a rather difficult proposition. There is no better way of making a lot of smoke than using an ordinary furnace under a tubular boiler. If you are trying to make all the smoke you can, that is the way to do it, owing to the very cold surface of the boiler. If you used hot air or gas in the furnace and put your hand on that boiler it would feel cold to you, because there is a big difference between the furnace temperature and the temperature of the boiler, so I say that when the product of combustion comes in contact with the boiler, that is the best way of making smoke. There have been quite a number of devices to obviate that in connection with that class of boilers, but they are usually such small boilers that the people who make boilers have not given enough attention to it. There ought to be some sort of fire brick or arches; a fire brick arch right over the grate so that the fire does not come in contact with the boiler.

Mr. Hammerschmidt: Do you advise a fire arch over the fire?

Prof. Breckenridge: Yes. It would have to go back probably four or five feet.

Mr. Mamer: I would like to ask, in constructing a furnace like that, if it would not be more practicable to put in that arch so that the gas, instead of pressing to the rear, would pass toward the front and then over top of the arch, as they do to some extent in some of the big locomotives.

Prof. Breckenridge: It is very difficult to discuss details in a meeting like this. Distill your gas from your coal slowly, have the products of combustion mix with the proper amount of hot air and keep the fire away from the cold boiler surface. Now, that is not always done and it is not easy to accomplish all those things. In getting up steam it will take less coal because you will burn all that you put in there. Some people think that because the heat is not taken right into the boiler above the fire it is never taken up; but it is. Of course, you have got to proportion your heating surface right. You practically produce your gas and it will stay at a high temperature and then turn into the boiler after complete combustion. I told you if we got started on the smoke business there would be no end of it. You would be surprised to know how little carbon there is in this dense, black smoke that pours out. But there is no black smoke if the combustion is complete.

President Stipes: The next paper on the program is "Cost and Estimates on Handling of Clay Materials"—by Mr. J. K. Moore and Mr. H. R. Straight, of Champaign.

This paper will be printed later

The President: The next on the program is a discussion, "Should tile be layed deep or shallow to get the best results?"

Mr. Walter: As to the depth that the tile should be laid, the formation of the soil should have a great deal to do with it. If you have a clay subsoil or hard pan, you cannot lay your tiles over a foot and a half or two feet deep. If you have a gravel subsoil, you can lay three or four feet deep. You cannot have any definite plan in laying tile. It is all owing to the soil. We have soil in our county where the tile would not draw more than a foot and a half. As I say, the ground has a good deal to do with it.

Mr. Hammerschmidt: I think tile can never be laid too deep. I don't care whether it is hard-pan or not. I don't believe that a tile ought ever to be laid less than $3\frac{1}{2}$ feet deep. If it is hard-pan, pick through it. This question has been up often. I haven't anything more to say about it for I think that answers the question. You never can lay it too deep to suit me.

Mr. Walter: You have different soil than we have.

Mr. Hammerschmidt: I don't care what soil it is. I never saw it laid too deep. I have seen the men pick through it inch by inch. The water will get through it.

Mr. Mamer: According to that statement it would seem that the deeper laid tiles would retain more of the fertilizing qualities of the rainfall. I think that where the tile is laid deep it will do so to a greater extent than where it is laid shallow. As far as hard-pan is concerned, my experience has been very similar to what Mr. Hammerschmidt says. I know where tile has been laid where years ago it was a common expression that the "clay came up to the rail fence," but now it is good soil. In a great many instances it has appeared that where tile was laid in hard-pan it did not work as successfully as it should until the fifth or sixth year. It seemed to take that long for the soil to become loosened and the water it work through it. In my part of the country we have some cases where it is laid 15 feet deep and that tile will drain the water for 10 or 15 rods on each side of it.

Prof. Rolfe: I did not care to take part in the discussion the gentleman speak of. There is one point, however, that has not been referred to in this discussion and that has not been taken into account. There is no doubt in my mind that if one wishes the immediate effect of the tile, if he wishes to see the tile drain at once as soon as it is laid, there is no question but that the tile should be laid shallow, if there is any closeness in the subsoil or in the soil itself, but I do beleve that Mr. Hammerschmidt is right. If you want permanent value out of your tile you want to put it down deep. The one object of the tile, besides carrying off the water is to bring the water to the roots of the plants. If you wish to do that, you must put your tile down deep enough to be effective. If you put your tile down 18 inches, it will be 18 inches, and if you put it down 4 feet, it will be 4 feet. I believe that the laying of the tile down deep will bring better results than if the tile is laid shallow. The question in a discussion of this kind is, what is hard-pan. That is

a pretty difficult question to answer. We mean a dozen different things when we use the word hard-pan. We may say that hard-pan is simply a close, dense clay, and then there is no doubt that if you coax the water through that close, dense clay you will change its construction so that you can increase porosity. While I am not an expert, I have made observations in regard to it.

Mr. Walter: If we tell our farmers that it will take five years before they get any benefit, I don't think we would sell any tile. The best plan, I think, is to put them closer together and more of them. That would help us and help them also. They would not stand to wait five years to get results out of the tile.

Mr. Hammerschmidt: I never have tried to make a farmer buy tile, because it is more profitable to me. I want a farmer to use tile at the least expense possible. In my county the clay is very tough. By putting the tile down the water will go through. If that tile lies on top, say 18 inches the water gets to it, but the water will go down there through the clay, I don't care how deep it is. It will gradually soften the clay and the surroundings. In a neighboring town they laid a sewer and they went down 28 feet. They don't need any tile for 20 or 30 rods on either side of it. The water went down through the clay and followed that sewer. The sewer was built in 1892. That is why it proved to me that the deeper the tile is laid the more benefit you get.

Prof. Rolfe: When the tile is laid below the clay and the water gradually works its way through, this is what seems to me to be true: It induces a sort of granulation of the clay, and the water goes down between those grains in the clay and makes the land porous. I believe that is a true explanation. Though I cannot say I know it.

Mr. Powell: I think that the fact of the water being taken out by the tile admits the air which disintegrates or breaks up, or softens the hard-pan. That has only been touched on. I think that that is the practical solution. I have known hard-pan to become soft after the water had been drained from it. I would like to know if Professor Rolfe thinks that is possible, that it would have that effect?

Prof. Rolfe: There is no doubt but what carbonic acid gas is in the air and it will help in the breaking up of the hard-pan.

Prof. Bain: In a good many cases in coal mines we have a hard clay, which is practically hard-pan. In some way or another the air in that case does have the effect of breaking down the shale, and I should think that something of the same kind might take place under ground when you put in a drain pipe. We hope to have some opportunity to make some experiments on coal mines, and the presence of gas, and things of that sort. I don't know whether we will be able to do that, but that is one of the things that we want to take up and then we may have some data to bear on the subject.

The President: While you have the floor, professor, you might tell us what has been accomplished by the Survey up to this time.

Prof. Bain: The particular things that the Survey have

done that are of interest to the clay workers were touched on by Prof. Rolfe. The fire clay work is very incomplete. We simply knew in a general way that there were certain clays, particularly in the southern part of the state, which were reputed to be fire clays, so we sent a man to get samples of them. We have practically nothing excepting the fusion test, but we hope to take up that subject and do more with it in the future. The work of the paving brick has gone much farther, and I hope that the results when they come out will prove of considerable value. I have in mind a few years ago when the matter of Portland cement was taken up in this country. We suddenly woke up to the fact that Portland cement was a very valuable thing and we might as well make it. In those days, and it is not very long ago, nobody knew exactly how to make Portland cement. We did not know what material to use. That was only ten years ago. Now it is very easy to determine whether the material is suitable for making Portland cement.

As I understand it, your brick making industries to-day are in very much the same condition that the Portland cement business was ten years ago. It is one of the hopes of our work that we may be able to help you and to help the clay school in getting the clay industries into better shape so that we can know more about our materials and how to make them. In this connection I don't know how much you realize that what you get depends upon what you ask, and how hard you ask it. We need money for the Ceramic School, and we want money for the Surveys, if you want the work done you will have to help us ask for it. It depends on individual work on the part of every clay worker. (Applause.)

Mr. Hammerschmidt: I make a motion that you appoint a committee on nominations to report on the last day of this meeting.

President Stipes: The motion is seconded and carried. I will appoint a committee at the Wednesday morning session. For the Committee on Resolutions, I will appoint the following named: H. de Joannis, of Chicago; Walter M. Pratt, of Earlville, and C. C. Barr, of Streeter.

The convention then adjourned to Wednesday, January 23, at 10 A. M.

IRONTON-ASHLAND BRICK WORKS DOING AN IMMENSE BUSINESS

The Ironton-Ashland Brick Works, Ironton, O., of which F. E. Hayward is president, have just closed one of the most prosperous years in their history of brick making. During the last ten months they have sold linings for 11 blast furnaces, which is a record for one year. One plant of this company is shut down now owing to the fact of the scarcity of labor and the dearth of cars for shipping the finished product. This plant, however, will likely resume about the first of February.

As an index of how business is going with the concern, their entire output for the next six months is already sold.

Mr. Hayward said that the past year was a hummer, but that he expected 1907 to eclipse any year yet in the way of demand for high class brick.

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No. 2

"I like to read American advertisements. They are in themselves literature, and I can gauge the prosperity of the country by their very appearance."—William E. Gladstone.

When times are dull and people are not advertising is the very time that advertising should be the heaviest. Ninety-nine out of every hundred merchants advertise most when there is least need of it, instead of looking upon advertising as the panacea for their business ills.—John Wanamaker.

CONVENTIONS

The Twenty-first annual convention of the National Brick Manufacturers' Association will be held at St. Louis Mo., February 4th to 16th, 1907. Sessions will be held Wednesday, Thursday and Friday, 6th, 7th and 8th; the balance of the time will be devoted to visiting clay plants.

The Ninth annual convention of the American Ceramic Society will be held at St. Louis, Mo., February 4-5, 1907.

The Second annual convention of the National Paving Brick Manufacturers' association will be held at St. Louis Mo., February 4, 5, 6, 1907.

The Seventh annual convention of the Wisconsin Clay Workers' association will be held at Madison February 27, 28 and March 1, 1907.

Lack of push and self-confidence keeps many a man's nose on the grindstone.

After you do some men a favor they are apt to be afflicted with a partial loss of memory.

As yet the mirror has not been made that will enable a man to see himself as others see him.

Subscribe for the CLAY RECORD. It is the only clay journal in America that is printed twice per month, and costs the small sum of one dollar for a year. You can get all the news all the time from two weeks to three months quicker than in any other journal. Try it and be convinced.

Your friends think that you are right and your enemies think that you are wrong, but you have to show the rest of the cold, unsympathetic crowd.

The rapid corrosion of steel, especially fence wire, has induced the United States Department of Agriculture to make a thorough investigation of the subject. The old style iron fence wire made from twenty to thirty years ago has withstood corrosion much better than the modern steel wire which has now entirely displaced the iron wire. Iron wire fences erected over thirty years ago are still in a fair state of preservation, while the life of modern steel wire is only from two to five years. Even where the wire is galvanized it does not possess the weathering properties of the old-fashioned iron wire. In fact the galvanized wire corrodes much faster than the plain steel wire at points where the galvanizing coat is defective, due to chemical re-action between the two metals, producing local electrical currents at the exposed points. The rapid corrosion of steel is due to the impurities it contains, and principally to manganese, which is found in small particles distributed through the mass, which like the exposed iron through the galvanizing coat sets up chemical reaction between the two metals, resulting in the production of local electrical currents. The work done by these currents is corrosion. What is true of steel fence wire is equally true of steel pipe, roofing plates, I beams and steel rails. In order to give longer life to steel exposed to the elements the steel mills are specifying ore containing less manganese and other impurities. The writer has seen steel I beams supporting vault covers in damp situations so much corroded after ten years of service that the web of the beam could be broken through with the thrust of a cane or walking stick. The question of stability of our modern steel frame building being undermined by corrosion has frequently been discussed in a general way without throwing much light on the subject. In a number of instances structural steel frames have been examined and found practically free from corrosion after fifteen years of service. Yet the fact remains, that steel conveying impurities, especially manganese, is not a long lived material, unless thoroughly protected by paint, or better still, an envelope of concrete.

WORKERS DRAW \$1,000 FOR FURNISHING IDEAS TO TRENTON CORPORATION

Trenton, Jan. 25.—In accordance with a plan formulated a year ago, the Trenton Potteries Co., which is composed of the sanitary pottery manufactories in this city, has distributed \$1,000 in prizes among its employes for the best suggestions for new pottery ware and improvements on old designs.

The highest individual prize was \$100. The idea is to stimulate workmen to invent new forms of pottery.

OBITUARY

John Murray of the Paducah (Ky.) Brick & Tile Works, died at his home on January 15th. He was formerly from Moberly, Mo.

Spencer S. Kimbell, a Chicago pioneer, and head of the S. S. Kimbell Brick Co., Chamber of Commerce Bldg., Chicago, died of Bright's disease at his home, 1493 Kimball Ave. At one time he was the manager of the Chicago Hydraulic Press Brick Co., but later was succeeded by his brothers. He was born in Chicago sixty-four years ago in the same block where he lived and died. He leaves a wife and three daughters.

CUTTING DOWN TREES FOR FUEL TO BURN BRICK

The Provo (Utah) Pressed Brick company has 440,000 brick waiting to be burned, and as the company cannot get coal it is cutting trees wherever they can be obtained and will use wood. Manager Belmont was promised some coke screenings by the Utah Fuel company some time ago and intended to give that kind of fuel a trial to see if it would serve his purpose, but he has not received any yet. The company is building a shed for storing brick before they are burned to hold 200,000, so that wet weather will not interfere with operations, and if fuel can be obtained work will be prosecuted all winter.

C. N. ADAMS CHOSEN PRESIDENT OF LOUISIANA BRICKMAKERS' ASSOCIATION

At the first annual meeting of the Brickmakers' Association of Louisiana and Mississippi, held on January 16, in the St. Charles Hotel, New Orleans, action was taken towards securing the National convention of the brickmakers in 1908 for New Orleans. A committee was appointed, consisting of seven manufacturers, who are to go to the convention, which meets in February at St. Louis, and a resolution was drafted requesting the national body to meet in the Crescent City. This was the most important action taken by the association, the other business being of a routine nature. C. N. Adams of Alexandria was chosen president; G. W. Gadron of Belle Helene, first vice president; G. A. Kent of Fluker, second vice president, and Frank Bethune, secretary and treasurer. F. Salmen, president of the Salmen Brick and Lumber Company, of New Orleans and Slidel, presided at the meeting, being retiring president of the association. Frank Bethune was secretary. Mr. Adams, who was chosen president, was the first vice president under the former organization.

There was some discussion on the part of the individual members upon the car shortage question, but no definite action was taken.

At its close the members were given a banquet at the St. Charles Hotel.

There were 108 brick plants in operation in the state of Louisiana during the year 1906. The total number of brick manufactured during the year was 161,000,000. The total value of plants in operation \$2,980,000. Mr. Adams should justly feel proud of the honor conferred upon him in the election to the position of president of the Brickmakers' Association. He is a man of intelligence and knows the business from start to finish.

FIRES, ACCIDENTS, DAMAGES, AND LOSSES

The plant of the B. K. Enamel Brick Co. at Leavittsburg, Ohio, was bought in by Barnesville, Ohio, creditors, for \$14,000.

The brick plant of Henry Maurer & Sons Co., Perth Amboy, N. J., was damaged badly by fire. The drying department of the plant is in ruins.

An explosion at the Carlyle Paving Brick Co's. plant at Sciotoville, Ohio, destroyed one of their large kilns by water coming in contact with the hot kiln.

The Uniform Brick & Clay Co., Hudson, N. Y., schedules in bankruptcy liabilities of \$65,000 and assets \$100,000. \$59,000 of the creditors' accounts are secured.

The Chicago Hydraulic Press Brick Co., whose works at Porter, Ind., were destroyed by fire and who sued the Ry. for \$78,000, effected a compromise and accepted \$20,000 as a settlement.

Jennie Mussleman has been given a verdict of \$5,000 damages for the loss of her husband's life at the plant of the Nelson Brick Co., at Mound Valley, Kansas. He was killed by the falling of a kiln.

Orville Winters, a fourteen-year-old boy, has sued the Summit Sewer Pipe Co., Akron, O., for \$5,000 damages for alleged injuries which he claimed he sustained by having his hand crushed in a clay hopper.

The Veedersburg (Ind.) Clay Co's. plant which was put into the receiver's hands was sold to C. A. Richard, Frank W. Wood and Fred B. Adams for \$18,500. It is said the purchase was made for the Adams Brick Co., of Indianapolis, and that the company will be called the Veedersburg Clay Mfg. Co.

George T. Butler, president of the Ft. Wayne (Ind.) Pressed Brick Co., has been charged by Richard A. Howard, of Peru, Ind., with obtaining money by fraud. He sold Mr. Howard and others stock in a Portland Cement Co., that did not pan out as was expected to. He claims to have lost \$7,500 in the deal himself.

PHILLIPS & McLAREN INCORPORATE

The co-partnership heretofore existing under the name of Phillips & McLaren, was dissolved January 1, 1907, and they have organized a corporation under the laws of Pennsylvania under the name of Phillips & McLaren Company for carrying on the same business on by said partnership, of which corporation John McLaren is president and William J. Phillips is secretary and treasurer.

With the assurance that the corporation will maintain the same standard of excellence and the same fidelity to the interests of patrons, they respectfully solicit a continuance of your custom.

A NEW POTTERY FOR MACOMB

Plans are materializing whereby the Buckeye Pottery Co., W. J. Pech & Son, proprietors, of Macomb, Ill., will build a \$100,000 stoneware plant. The probabilities are that this plant will be located in Kansas, although several good propositions are to be investigated. This concern was established in 1882 with a capacity of 250,000 gallons per annum, and at the present time they are making 1,800,000 gallons per annum, and have been compelled to buy from Ohio concerns to fill their orders.

THE AMERICAN HOLDS A CONVENTION OF ITS OWN

The "men who make Bucyrus famous" by spreading the gospel of truth throughout the world concerning the merits of the machinery manufactured by The American Clay Machinery company of Bucyrus and Willoughby, have been renewing acquaintances and outlining plans for the future with meetings at the offices of the company Thursday and today. All the traveling salesmen of the company and representatives of the Willoughby office were in attendance and the time had been devoted to strengthening the ties of both a social and business nature.

Bucyrus people who do not fully appreciate the magnitude of the company's business would be impressed with the small army of salesmen who are devoted exclusively to the sale of the machinery of the American company. They are a fine body of men and promote the fame of the city of Bucyrus by their missionary work in all parts of the country from New Foundland to Texas and from New York to San Francisco.

Those in attendance were as follows: R. C. Penfield, New York; L. W. Penfield, Willoughby; Preston Penfield, New York; J. A. Ridgway, New York; W. W. Whiting, Pittsburg; J. D. Whitaker, Raleigh, N. C.; M. Tippery, Philadelphia, Pa.; G. C. Stoll, Chicago; H. L. Harmon, Ft. Worth, Texas; T. L. Myers, Los Angeles, Cal.; E. J. Rutland, Chilhowie, Va.; S. J. Heafield, Columbus, Ohio; E. J. Shaw, Seattle, Wash.; E. G. Castenhuber, Schenectady, N. Y.; W. J. Carmichael, Willoughby, Ohio.

A feature of the gathering was a fine dinner served by Mr. Penfield at the home of F. L. Hopley, advertising manager of the company. Covers were laid for thirty including the salesmen and heads of departments in the offices of the company. The dinner was an unusually pleasant affair after which R. C. Penfield as toastmaster called for remarks from each of those present. The balance of the evening was devoted to social enjoyments.

The menu was as follows, furnished by Elberon and served by the King's Daughters:

Chanute, Kan.; H. B. Wiley, Chanute, Kan.; A. R. Batley,		
Blue Points on Half Shell		
Bouillon		Celery
Roast Turkey and Roast Duck and Jelly		
Brown Sweets		
Asparagus Tips and Toast		
Mashed Potatoes		Lettuce and Eggs
	Lemon Ice	
Fruit Ice Cream		Assorted Cakes
	Nuts	
Cigars	Coffee	Creme de Menthe

A pleasant feature of the meeting of the salesmen of the American Clay Machinery company in this city took place at the offices of the company when the salesmen, as a token of esteem, presented C. B. Sharer, head of the sales department, with a most elegant assortment of cut glass. A happy presentation speech was made in behalf of the salesmen by G. C. Stoll, of Wheaton, Ill., to which Mr. Sharer feelingly and appreciatingly responded.

Mr. Cunningham who celebrated his fifty-third birthday Friday, was next called upon the carpet and presented with a sparkling and elegant lot of cut glass. So lavish was the display that seemingly some Bucyrus store will have to replenish its stock at once. R. C. Penfield made the presentation speech in a very pleasant manner to which Mr. Cunningham humorously and feelingly responded.—*Bucyrus Evening Telegraph*.

A BRICK COMPANY APPEALS TO THE INTER-STATE COMMERCE COMMISSION AND WINS

The Interstate Commerce Commission has just promulgated its first decision since the new rate law went into effect, in which use is made of its rate-making power. The decision brings out in an interesting manner some typical features of the rate-making methods which must be employed by all railroads.

The gist of the decision is that a rate of \$2.75 per ton, is a fair figure for carrying brick from Frederick, Md., to Elberon, N. J. Prior to December last the regular rate for such shipment was the sixth class rate of \$3.80 per ton. The sixth class applies to all traffic of rough character, such as stone, cement, lime, lumber, fireproofing, etc. This rate has been applied to such shipments from Frederick ever since the "Official Classification" was established.

The Frederick Brick Company, however, desiring to make certain shipments over the Pennsylvania Railroad, asked for a special commodity rate.

The basis of charges from points west of the Northern Central to points on the New York and Long Branch road has been the regular rate to Jersey City plus \$1. It was found the principal competitive brick shipping point with Frederick enjoyed a rate of \$2.10; therefore, it was deemed fair to quote subject to acceptance in time for publication upon statutory notice, a rate of \$3.10 from Frederick to Elberon, N. J.

Nevertheless, this charge was not accepted by the brick company. A shipment was, however, made and the company then charged it at the old rate of \$3.80. The brick company, however, complained to the Interstate Commerce Commission and asked that the rate of \$1.85 be established as a fair rate for such shipments.

Meanwhile, in its regular process of developing traffic, the Pennsylvania Railroad had again taken up the matter, and had figured that as Frederick has a rate to Jersey City of \$1.75, the company could make the rate to Elberon \$1 above the Jersey City rate, or \$2.75, without seriously disturbing other rates. The railroad company thereupon published a rate of \$2.75 per ton for this traffic and has been charging that amount ever since.

The complaint of the brick company came before the Interstate Commerce Commission, and the Pennsylvania Railroad stated that it would be perfectly willing to refund to the Frederick Brick Company the difference involved between \$3.80 and \$2.75, provided the complainant could secure approval of the Commission. The Interstate Commerce Commission, after a full hearing, indorsed the rate which the railroad company had made in the regular course of business, and ruled that the rate of \$1.85 would be an unreasonably low one.

It is an interesting feature of this controversy that one of the first of such cases to be considered hinges upon matter of competition between two localities manufacturing the same product, and upon the fairness of the railroad's treatment of the two places, rather than upon the actual cost to the railroad of the service rendered.

It was testified before the Interstate Commerce Commission that if the rate of \$1.85 asked for should be granted it would upset the basis for rates from all brick territory in Central Pennsylvania, as far west as the Pittsburg district certainly, and probably also even west of that point.

After full hearing before the Interstate Commerce Commission, decision was rendered that shipments moved under the \$3.80 rate prior to the issuance and filing of the \$2.75 rate, should be corrected to that basis and refund made to the Frederick Brick Company.

DECLARES AN EXTRA DIVIDEND

As a result of an unexpectedly large business in its products during the last three months, the directors of the National Fire Proofing company, Pittsburg, Pa., declared, in addition to the regular quarterly dividend of 1 per cent on the preferred stock, an extra dividend of 1 per cent, payable Jan. 15 to holders of record on Dec. 31.

At the previous dividend meeting, three months ago, the directors authorized the resumption of dividends on the preferred stock by declaring a quarterly dividend of 1 per cent. The dividends on the preferred stock are not cumulative, and, from the latest action of the directors, it is assumed that they will continue to declare 1 per cent quarterly and an extra dividend from time to time until the amount paid every year reaches 7 per cent, to which the preferred stock is entitled, before any dividend is declared on the common stock.

The National Fire Proofing Co. has outstanding capital stock amounting to \$7,951,450 of preferred and \$4,484,500 of common. Regular quarterly dividends of $1\frac{3}{4}$ per cent. were paid on the preferred from April, 1900, until July 25, 1905, when preferred dividends were suspended and were not resumed until three months ago. In 1902 a dividend of 2 per cent. was paid on the common stock, and in 1903 three quarterly dividends of $1\frac{1}{2}$ per cent each, were declared, but none has been paid since.

A NEW PORCELAIN FACE BRICK

A charter was granted in Trenton, N. J., for the incorporation of the United Porcelain Faced Brick Co. of Newark, N. J. The capital stock is \$500,000 and the incorporators are John L. Meeker, William P. Meeker, Thos. Fish and Edward S. Rankin, all of Newark, N. J., and J. Taylor Roth of Allentown, Pa.

The porcelain brick, which this company is manufacturing, is the invention of William P. Meeker of Newark, and is unsurpassed by any article in the same line for building purposes in the market. The porcelain face, which can be manufactured in any color or shape, is made by a glass company and is a superior article where the laws of sanitation must be strictly adhered to.

The bricks can be manufactured at any brick yard where there is what is termed an auger machine, and the face is cemented on with the best Portland cement.

Orders for the brick have been placed with large concerns interested in subway work, breweries, also swimming pools, railroad stations and municipal buildings.

J. Taylor Roth, one of the incorporators of the concern, has secured \$10,000 worth of stock.

WESTERN BRICK COMPANY BUILDS BRIDGE OVER THE VERMILION RIVER

The Western Brick Company, Danville, Ill., is completing a big steel railroad bridge across the Vermilion River south of its plant.

Work on the structure began during the summer and the bridge will be ready for use about January 15. It is 180 feet long. Recently the company purchased 200 acres of coal land south of the river and will open a new mine. It is for hauling the coal to the brick plant that the bridge is built.

PURINGTON CO. ANNUAL MEETING

The annual meeting of the Purington Brick Co. was held Jan. 24th, the following directors being chosen:

D. V. Purington, W. S. Purington, Geo. C. Prussing, C. D. B. Howell, W. E. Phillips, F. G. Matteson and C. H. Chamberlain.

The following officers were then chosen by the directors: President—D. V. Purington.

Vice-President and General Manager—W. S. Purington.

Secretary—W. H. Terwilliger.

Treasurer—C. H. Chamberlain.

The reports showed that 74,610,000 brick were made at the plant during the past year and that 78,262,000 brick were shipped from the local yards. 14,238 cars were used by the company during the year. The showing is an unusual one and gives a fair idea of the enormous amount of business carried on by the concern.

CENTRAL NEW ENGLAND BRICK EXCHANGE

The annual meeting of the Central New England Brick Exchange was held Jan. 15th. The following board of directors was re-elected: R. Clifford Merwin, New Britain; Horace D. Payne, New Britain; G. N. Dickerson, Hartford; George H. Todd, Hartford; G. A. Pickett, New Haven; R. O. Clark, East Berlin; Richard Murray, Berlin; John W. Holmes, New Britain; Joseph Powers, New Britain; Judge James Roche, New Britain; and William P. Felt, New Britain. The directors subsequently met and elected the following officers: President, George H. Todd, Hartford; vice-president, G. A. Pickett, New Haven; secretary, Horace D. Payne, New Britain; treasurer and general manager, Virgil M. Palmer, New Britain. The only change in the officers is that Mr. Payne succeeds Representative R. Clifford Merwin as secretary. Mr. Merwin asked to be relieved, as he is too busy to attend to the work.

CHRISTY FIRE CLAY ELECTION

The annual election of the Christy Fire Clay company of St. Louis, Mo., resulted in the choice of Calvin M. Christy, president; Wm. C. Morris, vice president and general manager; Richard D. Hatton, secretary and treasurer; Robert H. Miller, sales agent and engineer; Chas. T. Farrar, member of the board of directors. Appointed: J. A. Schoedel, general superintendent; Vincent L. Lamy, assistant secretary; Paul C. Guignon, assistant sales agent; William I. Horton, assistant general superintendent; Felix A. Guignon, assistant general superintendent.

POTTERS WILL USE COAL

East Liverpool, O., Jan. 15.—The Manufacturers' Heat and Light company has announced that the price of gas to the manufacturing potters of the East Liverpool district will be increased 30 per cent. as soon as the meters can be attached to all of the kilns. The advance is resented by the manufacturers, who will arrange to put more than 300 kilns in this district on coal. The pottery manufacturers are receiving offers daily to remove their plants into gas belts and Pittsburg and Ohio coal operators are opening offices here in the hope of getting the coal contracts.

SAND OR LIME BRICK AND BLOCK NEWS

The Denbigh Brick Co., of Denbigh, N. Dak., has ordered an outfit of machinery for making brick out of sand lime.

The Chisholm, Boyd & White Co., of Chicago, has just closed a contract for a complete sand lime brick making plant to be shipped to the west.

The Rochester Sand Stone Brick Co., Detroit, Mich., has been incorporated with \$100,000 capital stock. The plant will be at Rochester, Mich.

The Somers Brick Co., Atlantic City, N. J., have just closed a contract for 2,000,000 sand-lime brick to be used by different New Jersey parties.

The Alleghany Facing Brick & Concrete Co. has begun the work of constructing their plant at Wellsville, N. Y. The directors are Felix Schuable, Elmer Parker, G. W. Rice and W. L. Calhoun.

The McCracken-Green Concrete Co., Greenville, Ky., has been formed to take over the Portland Stone & Paving Co.'s plant. J. F. Green is secretary and treasurer, and R. C. McCracken is manager.

The Wilmington Granite Brick Co., of Wilmington, N. C., has been granted a charter with \$100,000 capital stock, \$25,000 subscribed. The incorporators are Geo. W. Kidder, F. H. Smith and T. H. Wright.

The Long Island Cement Block & Brick Co., of Port Washington, Nassau Co., N. Y., has been incorporated. The directors are Robert J. Culhane, Walter K. Welch and William A. Cooper of New York city.

At the annual election of the Paragon Plaster Co., Syracuse, N. Y., Jacob Amos was elected president; A. E. Nettleton, vice-president; William K. Squires, treasurer and manager, and W. F. O'Conner, secretary.

The Federal Granite Brick Co. held their annual meeting at Scranton, Pa. and elected the following officers: J. L. Warnke, president; John L. Schroeder, vice-president; R. N. LaBar, Secretary and manager, and Samuel J. Marsh, treasurer.

The Moscow (Pa.) Sand & Gravel Co. is the latest sand brick company to be incorporated. The officers are Philip Rinsland, president; Carl Lorenz, vice-president; Eugene Schimpff, secretary and treasurer. The contract for the necessary buildings has been let.

Brooklyn is using 6,100 tons of Storial brick for the paving of its streets. These brick were brought by the steamship Monadnock from Middlebrough, England. They are made of slag and are supposed to be more serviceable for paving than the American paving brick.

The Silica Block & Brick Mfg. Co., Brooklyn, N. Y., has been incorporated to manufacture silica block and artificial brick; capital stock, \$25,000. Incorporators are Hugh Moore, 731 Carroll street, and Harold Somers, 149 DeKalb avenue, Brooklyn, N. Y., and Frank Lyons of Plainfield, N. J.

At the annual meeting of the Genesee at Genesee, Pa., and Canisteo, N. Y., and at the latter meeting elected the following officers: Benton McConnell, president; Theodore Cobb, vice-president; G. M. Beasor, secretary, and Churchill Cobb, treasurer. Additional machinery will be installed in the plant and the capacity doubled.

MISCELLANEOUS ITEMS

The Ennis-Crisp (Texas) Brick Co., has been incorporated with \$25,000 capital stock.

The Cary Brick Co., Mechanicsville, N. Y., will increase its capital stock from \$150,000 to \$200,000.

The Hydraulic Press Brick Co., has been incorporated in New Jersey with \$3,000,000 capital stock.

The Lenten Brick Co., Twenty-fifth and Passyunk avenue, Philadelphia, Pa., will spend \$2,000 on improving its brick driers.

The Howard Brick Co., Claremont, I. T., has been incorporated with \$50,000 capital stock. A plant is being installed to make 50,000 brick daily.

H. L. Finklea, superintendent and manager of the Bessemer (Ala.) Fire Brick Co., has resigned and gone into the contracting business. J. H. Flautt succeeds him.

The Mitchell Brick Co., Delhi, O., has been incorporated with \$45,000 capital stock, by S. Mitchell, William Mitchell, Florence B. Mitchell, Louisa Mitchell and W. B. Stier.

The Imperial Coal Co., Beersville, N. B., are planning to establish a brickmaking plant with 20,000 daily capacity. Henry O'Neil of New York is president of the company.

The Memphis (Tenn.) Brick Supply Co., has been incorporated with \$40,000 capital stock, by G. W. McRae, O. H. Piper, R. A. Speed, Frank H. Reid and J. J. Bishop.

The Southern Clay Co., Guthrie, Ky., has been incorporated with \$100,000 capital stock by James M. Robinson and G. Howard Robinson of Guthrie and Hywel Davis of Louisville.

L. E. Armstrong and associates will build a large sewer pipe factory at Ft. Dodge, Iowa. The city council has granted them an extension of the water mains and free water.

The St. Louis-Greenville Pressed Brick Co., East St. Louis, Ills., has been incorporated with \$30,000 capital stock. Incorporators: Fred W. Kraft, W. E. Hadley and W. E. Wheeler.

The Dover Brick Co., Dover Plains, Dutchess county, N. Y., has been incorporated with \$200,000 capital stock. Directors: W. S. Ketcham of Dover Plains, Carl Wisner and H. B. King of Chicago, Ills.

The Sunbury (Pa.) Brick Co., has been organized with \$100,000 capital stock. Hon. C. R. Savidge is president. Hon. Ellis Orvis of Bellefonte is vice-president, and A. W. Duy of Bloomsbury, is secretary.

The Kirkville Clay Products Co., Syracuse, N. Y., has been incorporated to manufacture brick and building material. Incorporators: Isidore Putziger of Solvay, Herbert B. Mynon and William Ryan of Syracuse.

The Grundy Center (Ia.) Brick & Tile Co., will incorporate with \$35,000 capital stock. H. C. Ady and Henry Frerichs are the owners of the plant which was started three years ago; \$5,000 will be expended in improvements.

The South Webster (O.) Brick Co. will increase its capital stock from \$50,000 to \$100,000, and with the increased capital will put in additional kilns and facilities to double its capacity. W. E. M. Ranchous is president, Harry M. Strong, secretary and treasurer, and A. C. Harvey, manager.

The Gleason (Tenn.) Brick Co. has been incorporated with \$2,000 capital stock. Incorporators are J. Z. Alexander, W. B. Edmonson, R. W. Bandy, G. W. Bennett and R. H. Smith.

The Boone (Ia.) Brick, Tile & Paving Co., at its annual meeting re-elected its old officers. The manager, B. M. Huntley, stated that they had shipped over 700 cars of clay goods during 1906.

W. Lyle Dickey has bought a block of the stock of the Tulsa (I. T.) Brick Co., and will act as its secretary.

H. E. Francisco will go into the brick and tile business in the near future. He has options on a large tract of land near Fertile, Iowa.

The Forest City Brick Co., Cleveland, Ohio, has increased its capital stock from \$30,000 to \$50,000 and will use the money to make improvements.

The Blackwell (Okla.) Brick & Tile Co. has been incorporated with \$50,000 capital stock. Incorporators are Z. A. Harris, C. C. Frampton and G. P. Austin.

The new brick and tile works which is to be built at Weir City, Kansas, will be located near the Robinson coal shaft. A company of local capital will erect the plant.

The Arvada (Colo.) Brick Co. has been incorporated with \$80,000 capital stock with principal offices in Denver. Incorporators: Oscar D. Cass, J. D. Maitland and others.

The New Lexington (Ohio) Press Brick Co. recently elected the following officers: B. F. Rodgers, president; J. W. McDonald, vice-president, and C. H. Bell, secretary and treasurer. Several new kilns will be erected so as to keep up with the demand.

The Fond du Lac (Wis.) Pressed Brick Co. is planning to double their output this year.

The Humbolt (Tenn.) Brick & Tile Co. has been incorporated with \$15,000 stock to operate the plant that is already there.

The National Roofing Tile Co., Lima, Ohio, have authorized the doubling of the capacity of their plant. The plant will be enlarged in many ways.

Work on the \$105,000 plant of the Norfolk (Va.) Brick Co. was started about the 10th of this month by Contractor J. H. Pierce, and the plant will be built as rapidly as possible.

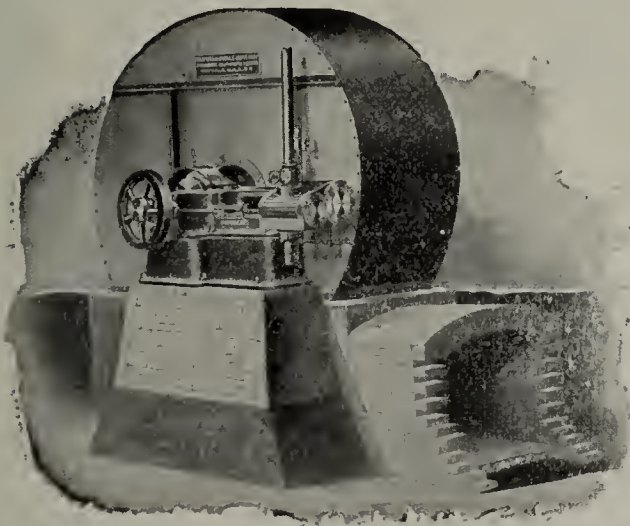
The Millsdale Pressed Brick Co. are putting their plant in readiness to operate. The plant is near Joliet, Ill., and the office of the company is in the Hartford Building at Chicago.

The Aberdeen (S. Dak.) Brick Co. at their annual meeting re-elected the old officers and decided to add a dryer equipment to the plant, which will permit of their making brick earlier.

The Stuyvesant Brick Co., Mechanicsville, N. Y., recently elected the following officers: C. R. Sheffer, president and treasurer; B. B. Smith, vice-president, and L. E. Sheffer, secretary.

A. N. Allen, local director of the Chanute (Kansas) Cement & Clay Products Co., states that their plant will be built immediately; that the plant will be located one mile west of the city. J. F. Townsend of Akron, Ohio, is the principal owner in the enterprise.

Buffalo Waste Heat Dryer.



"Buffalo" Waste Heat Fan Direct Connected Engine
Bottom Horizontal Discharge.

The first **WASTE HEAT DRYER** bore the name "**BUFFALO**." Economy is the watchword and in the third of a century since we began solving drying problems, there has been steady engineering progreeess.

"BUFFALO" WASTE HEAT FANS take the **WASTE HEAT** from the kilns and deliver it to the drying chambers, which can be automatically kept at any temperature and humidity. "**BUFFALO**" **FANS** have water-cooled bearings when necessary.

APPLICABLE TO BRICK, TILE AND TERRA COTTA PLANTS.

Our thirty years of success is due to a constant study of clays.

Write, stating requirements, and ask for catalog.

BUFFALO FORGE COMPANY, BUFFALO, N. Y., U. S. A.

CANADIAN BUFFALO FORGE COMPANY, MONTREAL, CANADA.

It is rumored that a large brick works is to be built at Powderly, twelve miles north of Paris, Texas.

The Weir City (Kansas) Brick Co. has been incorporated with \$50,000 capital stock. The plant will be located one-half mile from town.

The Carlisle (Pa.) Brick Co., of which Thos. McDonald is the able secretary and manager, will add new machinery and an improved dryer to its plant.

The Central Brick & Tile Co., Kalo, Iowa, has been incorporated with \$10,000 capital stock. Westley Bennett is president and F. W. Wonders, secretary.

The Industrial Brick Co., Mount Vernon, Ind., are spending from \$15,000 to \$20,000 in improving their plant. New machinery, dryer and kilns are to be added.

The Table Rock (Neb.) Clay & Brick Co. has just elected the following officers: C. R. Smith, president; Geo. F. Cotton, secretary, and D. K. Miller, treasurer.

Ed. Barr. of Austin, Minn., has moved to Mason City, Ia., where he will be the manager of the North Iowa Brick & Tile Co., a \$400,000 capitalized company.

The Big Horn Brick Co., Cody, Wyoming, has been organized to make common brick; later they will manufacture pressed brick. They wish some experienced operators. E. E. Bumpus is president and Fred C. Barnett, secretary and treasurer.

The Waco (Texas) Brick Co. has been incorporated with \$50,000 capital stock. Land has been bought near South Bosque and dry press brick machinery purchased. The incorporators are Judge George Clark, D. C. Bolinger, O. H. Cross and N. B. Williams.

The Russell Brick & Tile Co. has been incorporated with \$100,000 capital stock. Head office at Russell, Ontario.

W. C. Allen has purchased and will operate the Standard Brick Co. works at Oakwood, S. C. Office at Augusta, Ga.

George S. Good of Lock Haven, Pa., and other capitalists, are interested in putting in a large fire brick plant at Lumber City, Pa.

The Dardanelle (Ark.) Brick Mfg. Co. have their machine on the ground and sheds in readiness to make 20,000 pressed brick daily.

Herman Bros., of Tell City, Ind., have ordered plans for the construction and equipment of an extensive clay working plant for Cannelton, Ind.

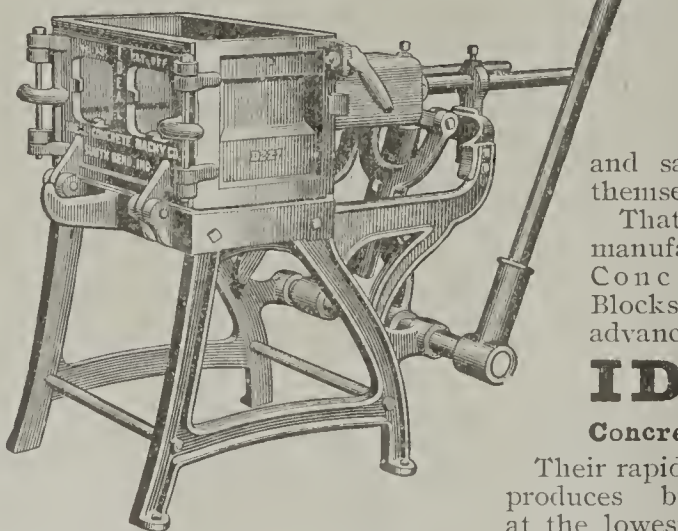
The Terpening Brick & Tile Co., Prairie Grove, Ark., are making extensive improvements preparatory to doing the largest year's work in the history of the plant.

J. Murray Africa has purchased over 1,000 acres of land at Selinsgrove, Pa., for some purpose unknown to the public, and is negotiating for the manufacture of 27,000,000 brick.

The N. E. Foundation Co., Portland, Maine, has been incorporated with \$200,000 capital stock. President, J. E. Manter; C. E. Eaton, treasurer; M. F. Baldwin, secretary; all of Portland.

The Dovenshire Brick & Ceramic Co., Columbus, Ohio, has been incorporated with \$10,000 capital stock. Incorporators are H. C. Taylor, C. C. Williams, S. G. Osborn, C. J. Pretzman, and Simeon Nash. They will take over the Roseville (Ohio) Brick & Terra Cotta Co.'s plant. Will Shoemaker is the superintendent.

HOW TO SELL BUILDING MATERIAL



The Ideal Concrete Block Machinery makes blocks at a cost that permits the underselling of all other building material.

Adaptable as to size of block and countless designs of face and natural stone effect.

Wonderfully simple. No chains, springs or gears.

Catalogue and fortune making facts on application.

Offer the builder a material absolutely weather and fire-proof; superior in appearance and durability to brick, stone or lumber; lower in cost than either,

and sales will make themselves.

That's why most manufacturers of Ideal Concrete Building Blocks are working on advance of orders.

IDEAL

Concrete Machines

Their rapidity of operation produces building blocks at the lowest possible cost. Embodiment the only principle (face down) permitting the practical use of rich facing material with less expensive material in back of blocks.

Ideal Concrete Mc'h'y Co.

Dept. W.

South Bend - - - Ind.

"Mussens Limited, Montreal,
Agents for Canada"

DIRECT HEAT

DRYERS

FOR

**BANK SAND
GLASS SAND
ROCK, CLAY
COAL, ETC.**

All Mineral, Animal and Vegetable Matter.

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue W. C.

American Process Co.,
62-64 William St. NEW YORK CITY

FOR SALE

One Hercules Steam Brick Machine, one 40 horse power gasoline engine, One semi-automatic side cut brick cutter, made by Wallace Manufacturing Co., One Kells brick machine, lot of wheelbarrows and trucks. All in good condition. Address

W. H. VANDER HAYDEN,
Ionia, Mich.

BRICK AND TILE MACHINERY AT SACRIFICE

Where a country is tiled, factories are offered complete, or in part, Cheap. Have seven Brewer Mills for sale, one No. 6 for \$35.00, some larger sizes, little used, Engines, Boilers, Crushers, Drying Pipes etc. If you wish to buy or sell write. Can secure experienced help. Brick and Tile Machinery

Secor, Ill.

FOR SALE.

An up-to-date brick plant. Capacity 35,000 brick Cheap fail and labor. Fine shipping facilities and an abundance of pure loose clay. Local demand takes almost entire output at good price. Will bear close investigation. Good reason for selling.

Address, WM. M. READ,
Princeton, Ind.

MACHINERY FOR SALE

One No. 2 Giant brick and tile, machine with dies for tile from 3 to 8 inches and side cut brick die. One Bunsing automatic tile cutter. One Bunsing automatic block and end cut brick cutter.

\$100 worth of repairs would put them all in first-class condition. Will sell cheap. Reason for selling, am using larger capacity. 1801 1/2 Second Ave.
Rock Island, Illinois.

BRICK YARD FOR SALE.

Brick Yard for sale cheap. A bargain to the right party. Good market at hand. For further information address

BRICKMAKER,
Care Clay Record, Chicago, Ill.

ROOFING TILE MAN WANTED.

WANTED—A young man experienced in the roofing tile business to act as Chicago city salesman Apply giving experience and reference.

Roofing Tile, care CLAY RECORD,
Chicago.

FOR SALE SECOND HAND 4 MOLD PRESS

in good order, one of the best presses on the market. Answer quick if you want it.

Address, G. care CLAY RECORD,
Chicago, Ill.

FOR SALE.

A well established brick yard near South Atlantic port, 60,000 population. Chambers 2nd cut machine, 46,000 brick daily capacity. Successful drying system, track to clay hole. A bargain. Satisfactory terms to good party. Address,

J. C. HAGLER,
Augusta, Ga.

SAND-LIME BRICK PLANT WANTED

WANTED—A sand and lime brick plant. Conditions good. Address,

BOX 2,
Big Run, Penn.

PLANT FOR SALE.

FOR SALE—A first-class Brick and Tile Plant in northern Minnesota, capacity 50,000 daily. Good reason for selling.

Address, JOHN C. PETERSEN,
Pelican Rapids, Minn.

SUPERINTENDENT WANTED

An experienced paving brick-maker who will take some stock in a paving brick company to be formed at Cheboygan, to make 30000 to 50000 brick a day. An abundance of the finest kind of shale, easily handled and a very good market. Superintendent will have full charge, address.

A. M. GEROW, Cheboygan, Mich.

ENGINES AND BOILERS

Corlis engines, 20x48, 18x36, 16x42, 12x36. Also 40 other sizes and styles in stock

Boilers, Tubular, 48x18 78x16, 72x18. Also 60 other styles and sizes in stock.

Send specifications of your requirements and we will make you a proposition that will interest you.

THE RANDLE MACHINERY CO.
1732 Powers St., Cincinnati, Ohio.

MANAGER WANTED

An experienced brick maker as superintendent and manager of a new brick plant, located on the Hudson River. River and rail shipments to New York. We are equipped with three machines, plenty of power, entire new equipment. Clay and sand within 600 feet of the machines, conveyed over trussel on cars to machines. Large sand bank from which abundance of sand can be shipped. Will require an investment from party wishing this position. Will give to right person absolute charge of plant. Address

C. R. SHEFFER, Pres.
Mechanicsville, N. Y.

FOR SALE.

Right and left-hand One, Two and Three Way Switches, of various gauges, radius and weight rail, at special prices.

THE ATLAS CAR & MFG. CO.,
Cleveland, Ohio.

FOR SALE—CHEAP—New and re-laying rails, 12, 16, 20 and 25 pound. For prices, address

ATLAS CAR & MFG. CO.,
Cleveland, Ohio.

FOR SALE

One Mascot machine with brick and tile dies. One end brick cut-off, style F, made by American Clay Machinery Co.

One hand side cut brick cut-off. These at your own price. Reason for selling have changed to a soft mud yard.

BLANCHARD BRICK & TILE CO.,
Blanchard, Iowa.

PALLETS FOR SALE.

FOR SALE—8,000 New All Steel Foot Pallets 34x10 inches In good order. Can be had at a bargain. Address,

THE CLEVELAND CAR CO.
West Park, Ohio.

FOR SALE.

One Indiana road machine, belt; pulleys. One 30 horse power Boiler, used one year. 60 brick cars, damaged by fire, parts easily straightened, very cheap.

4,000 feet, one inch steam pipe for dry kilns. One Wellington brick machine, cost \$800, will sell for \$400 and load on cars. A man having \$2000 to put in brick and tile business can make a good deal by writing me.

C. S. BEADLE,
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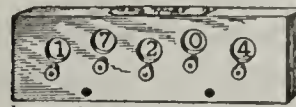
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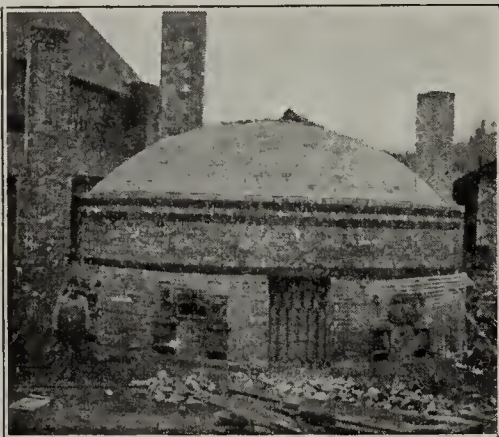
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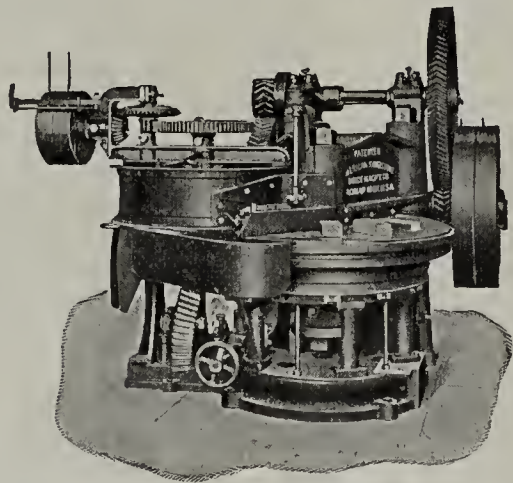
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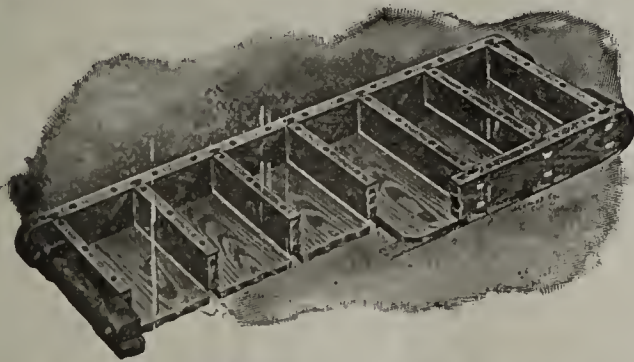
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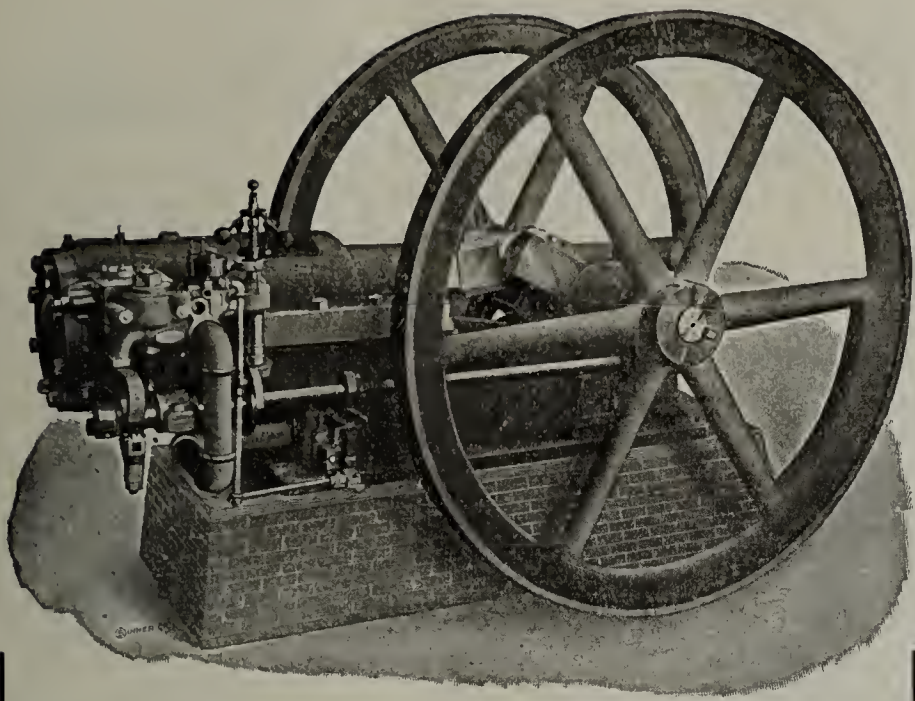
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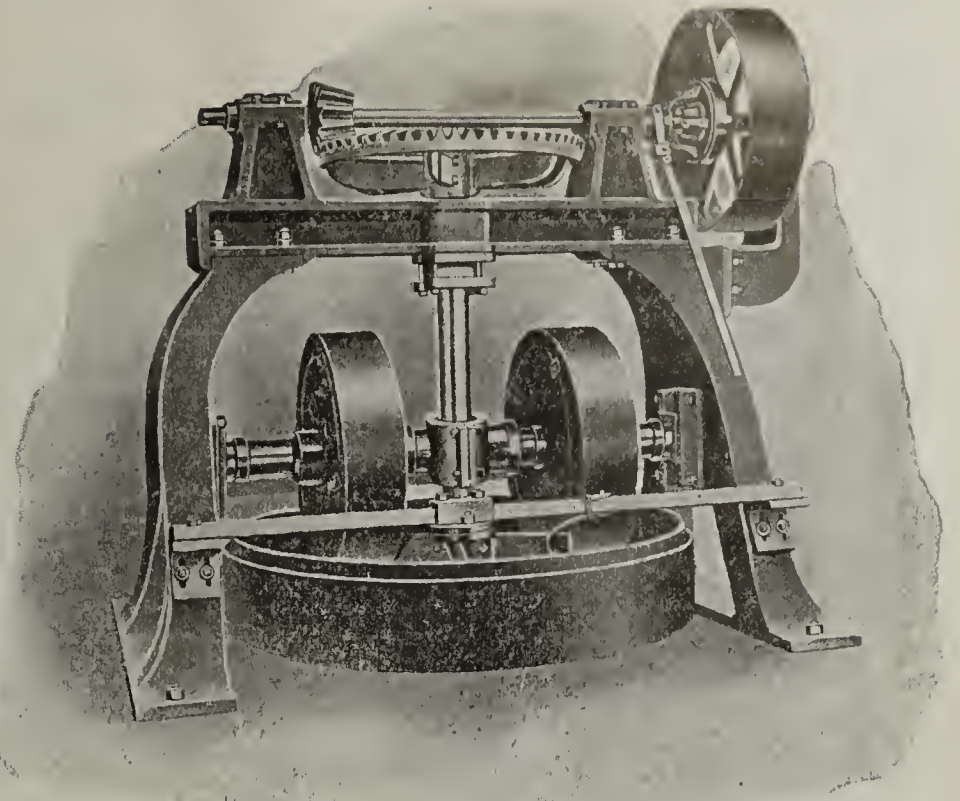


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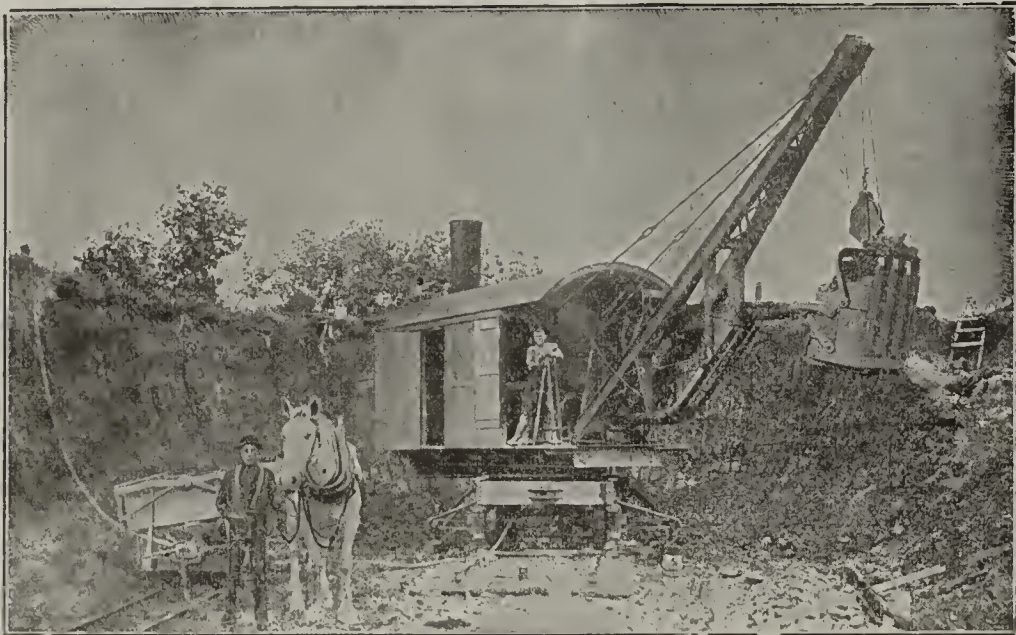
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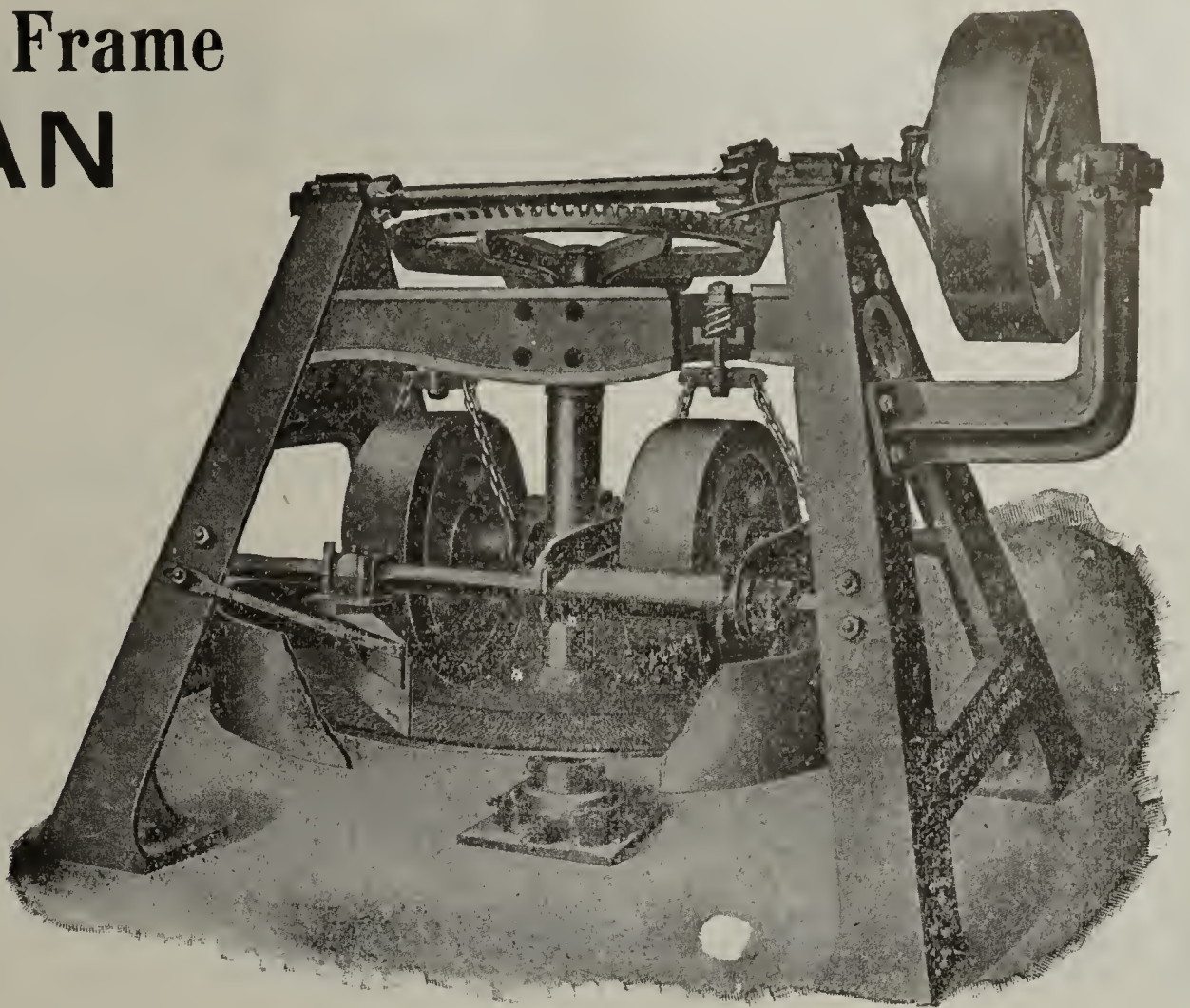
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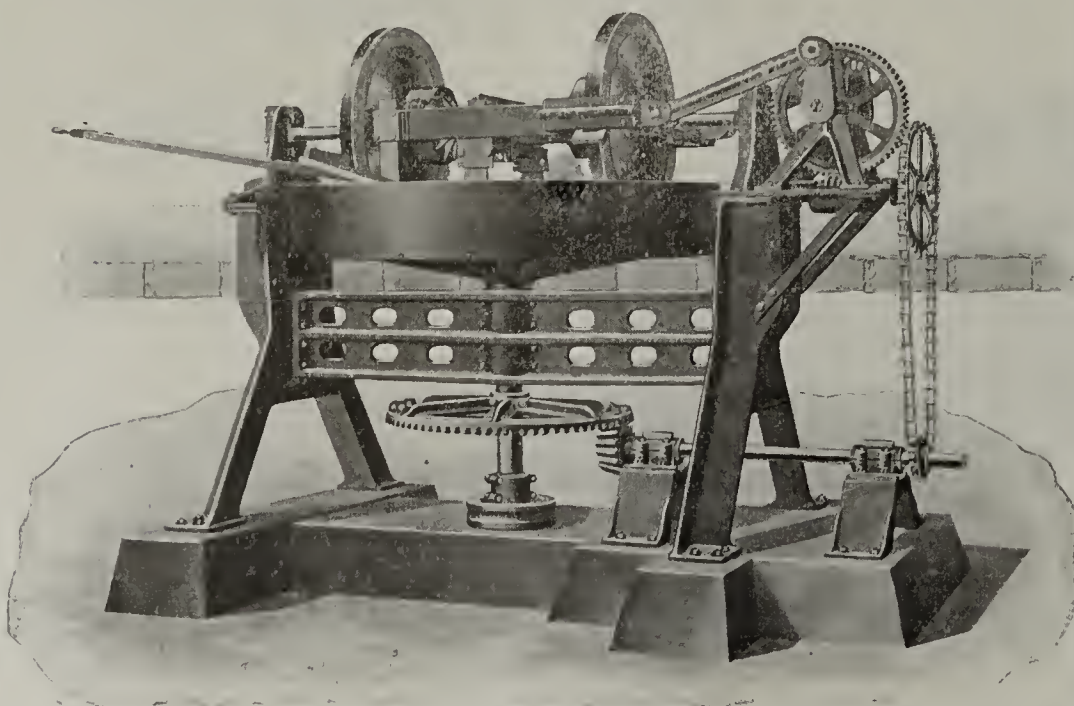
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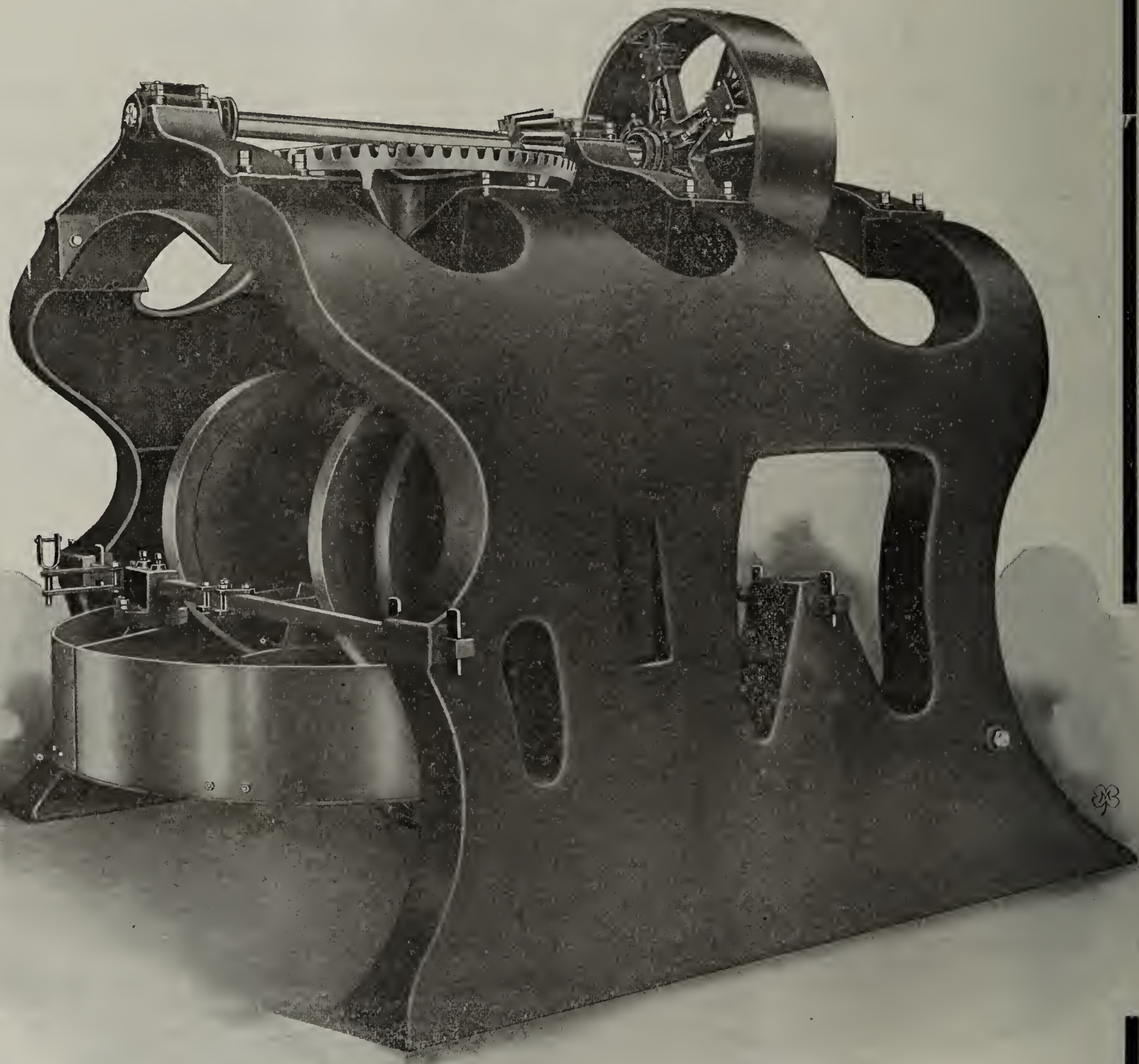
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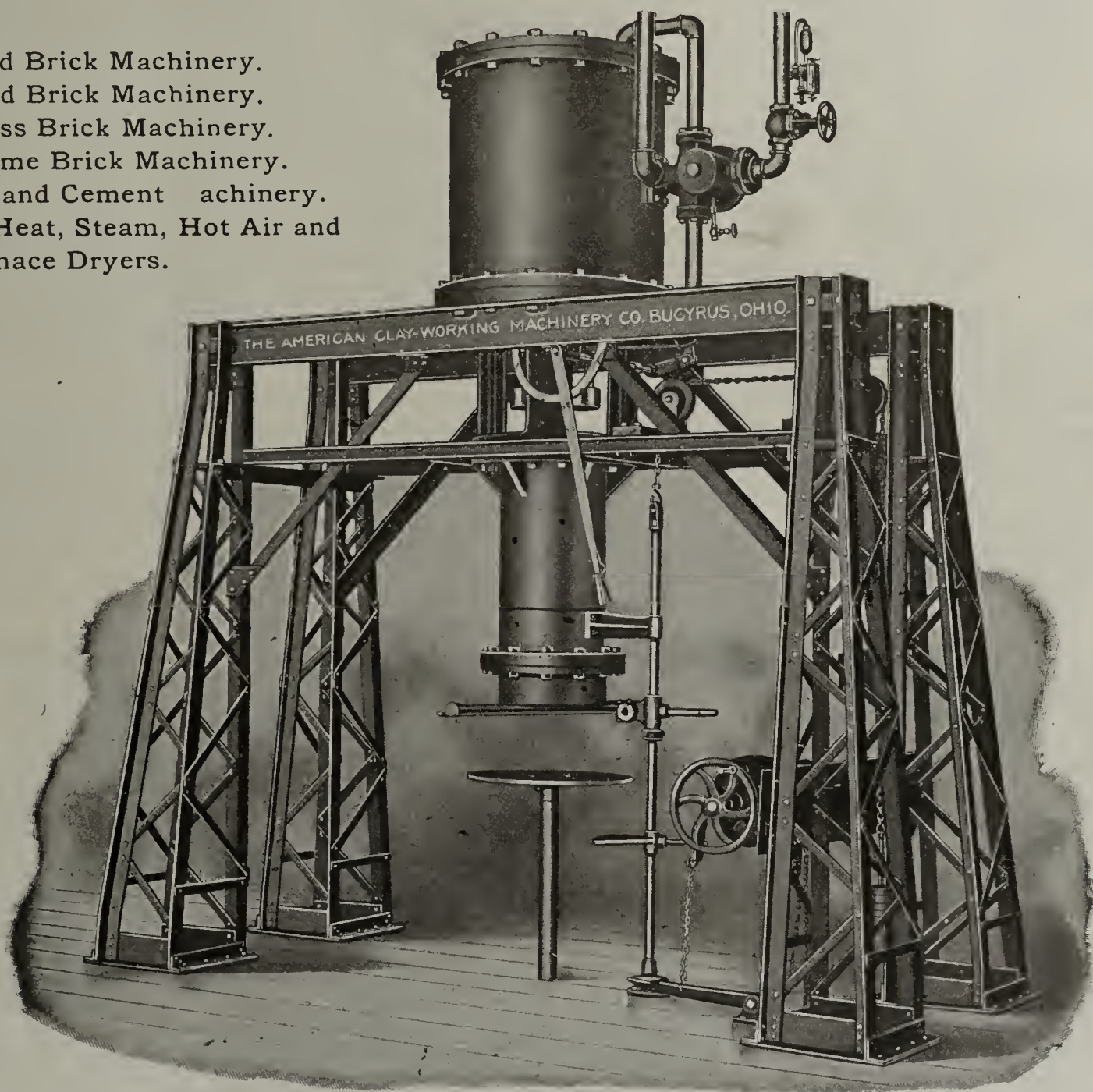
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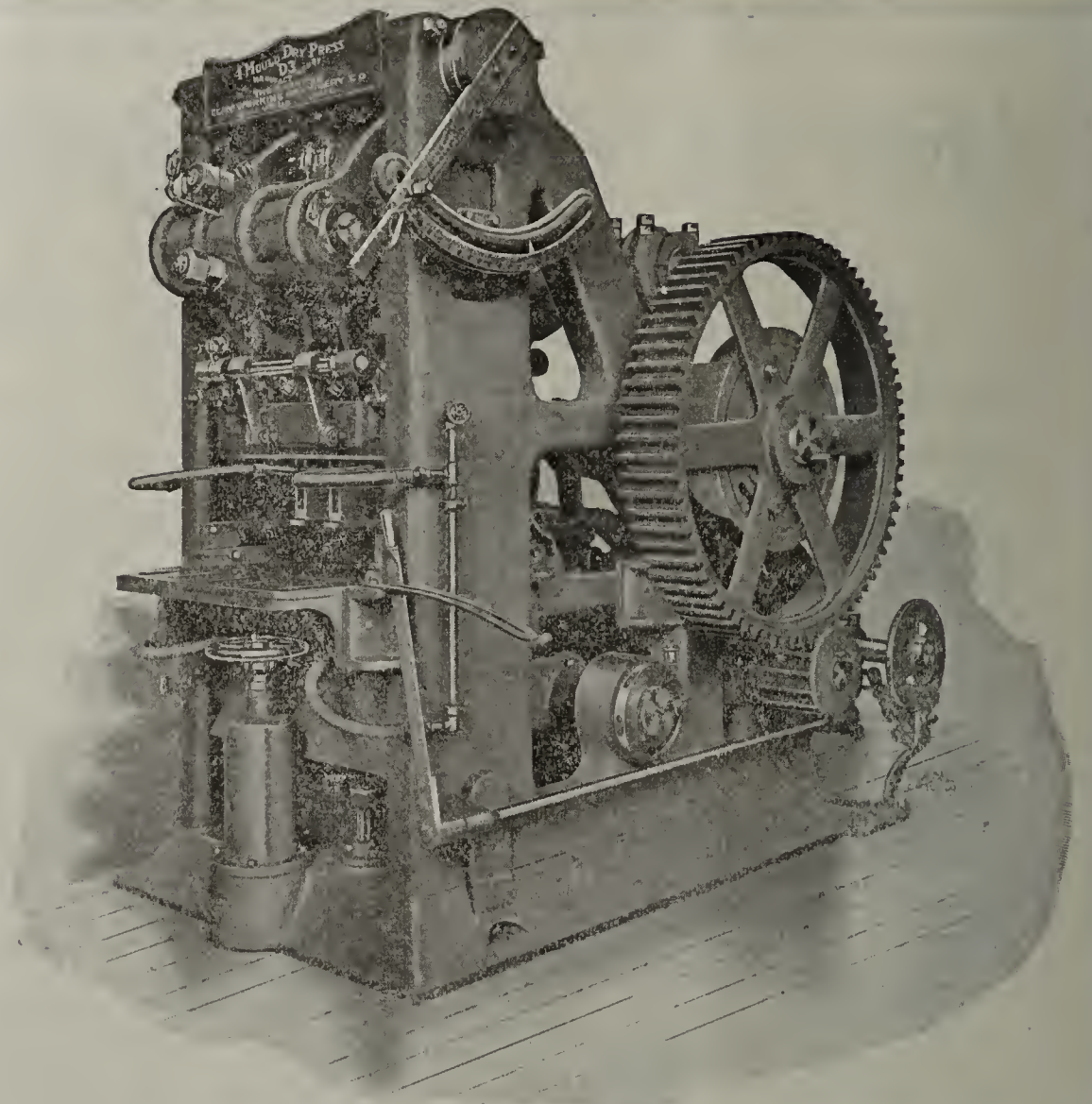
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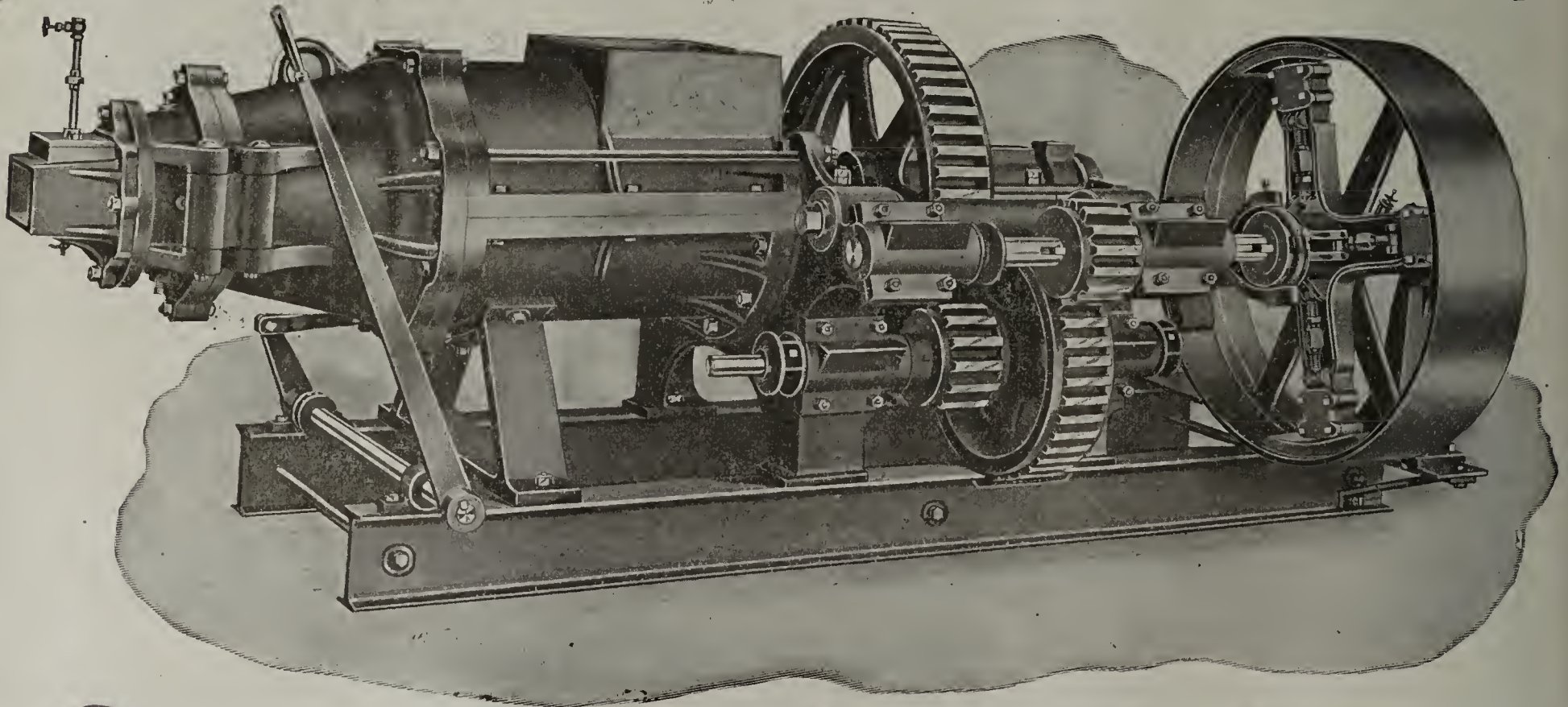
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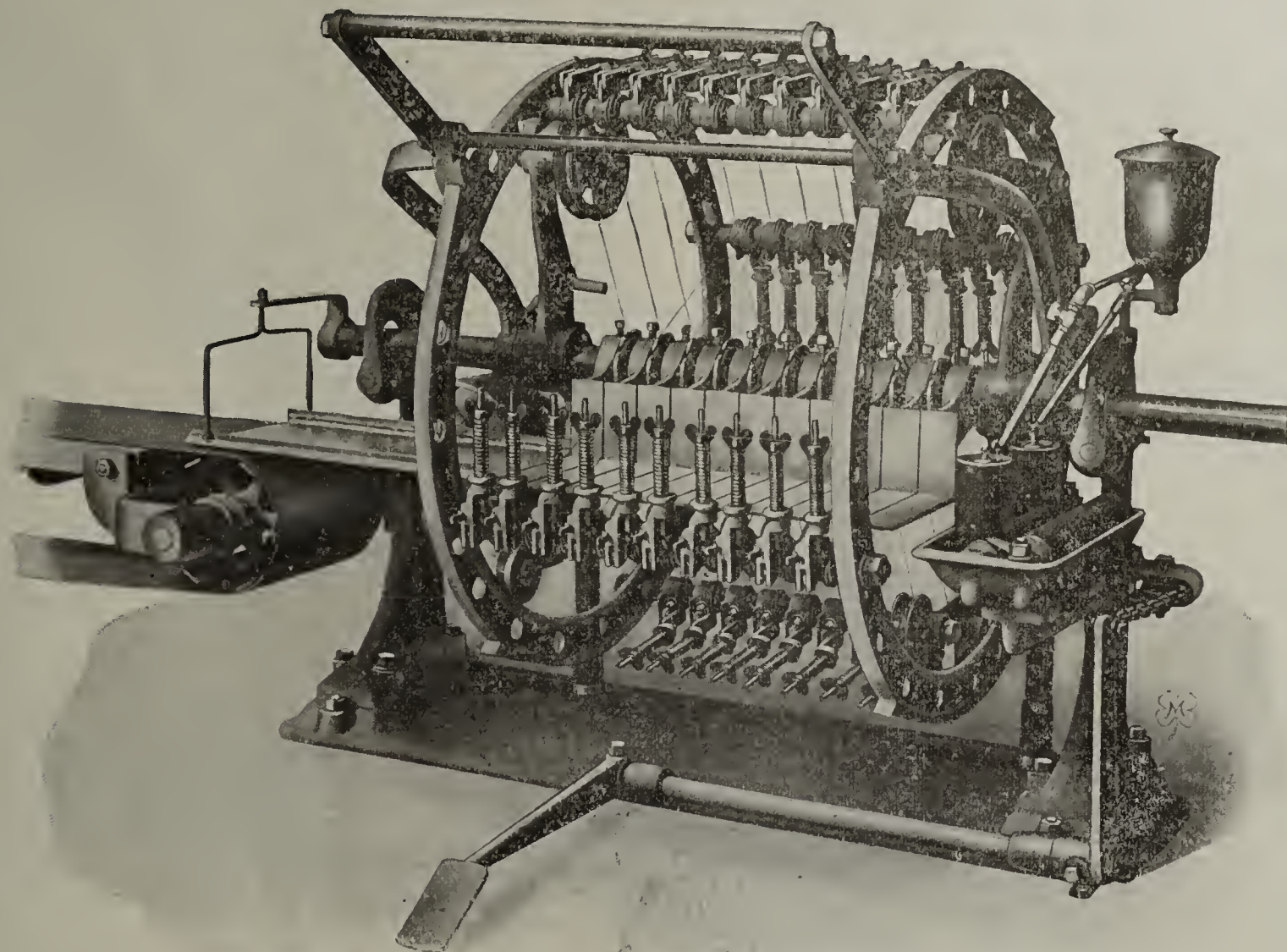


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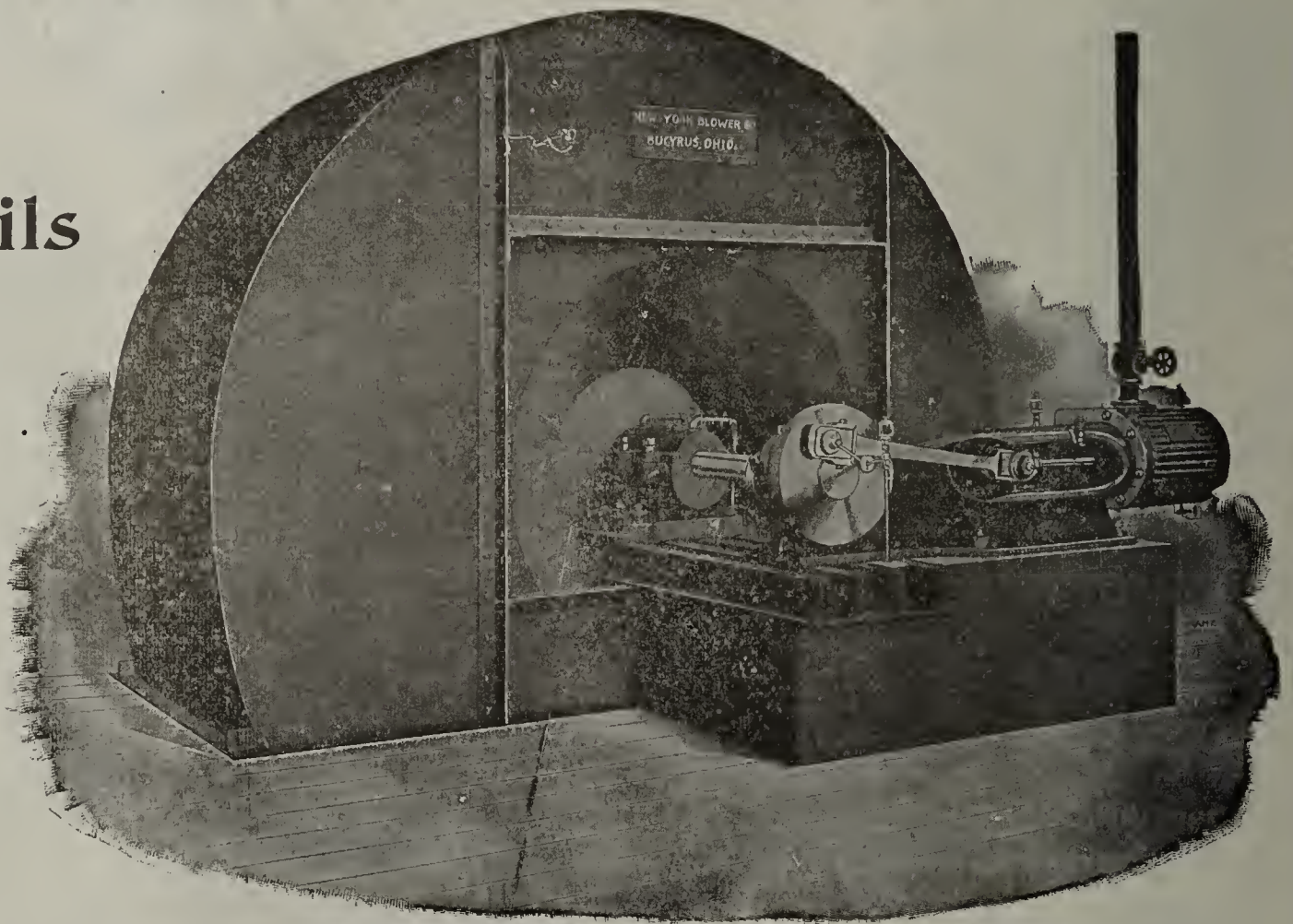
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NINTH FLOOR, CHAMBER OF COMMERCE
 PHONE MAIN 17

CHICAGO, Jan. 4, 1907.

The Barron Dryer Co.,
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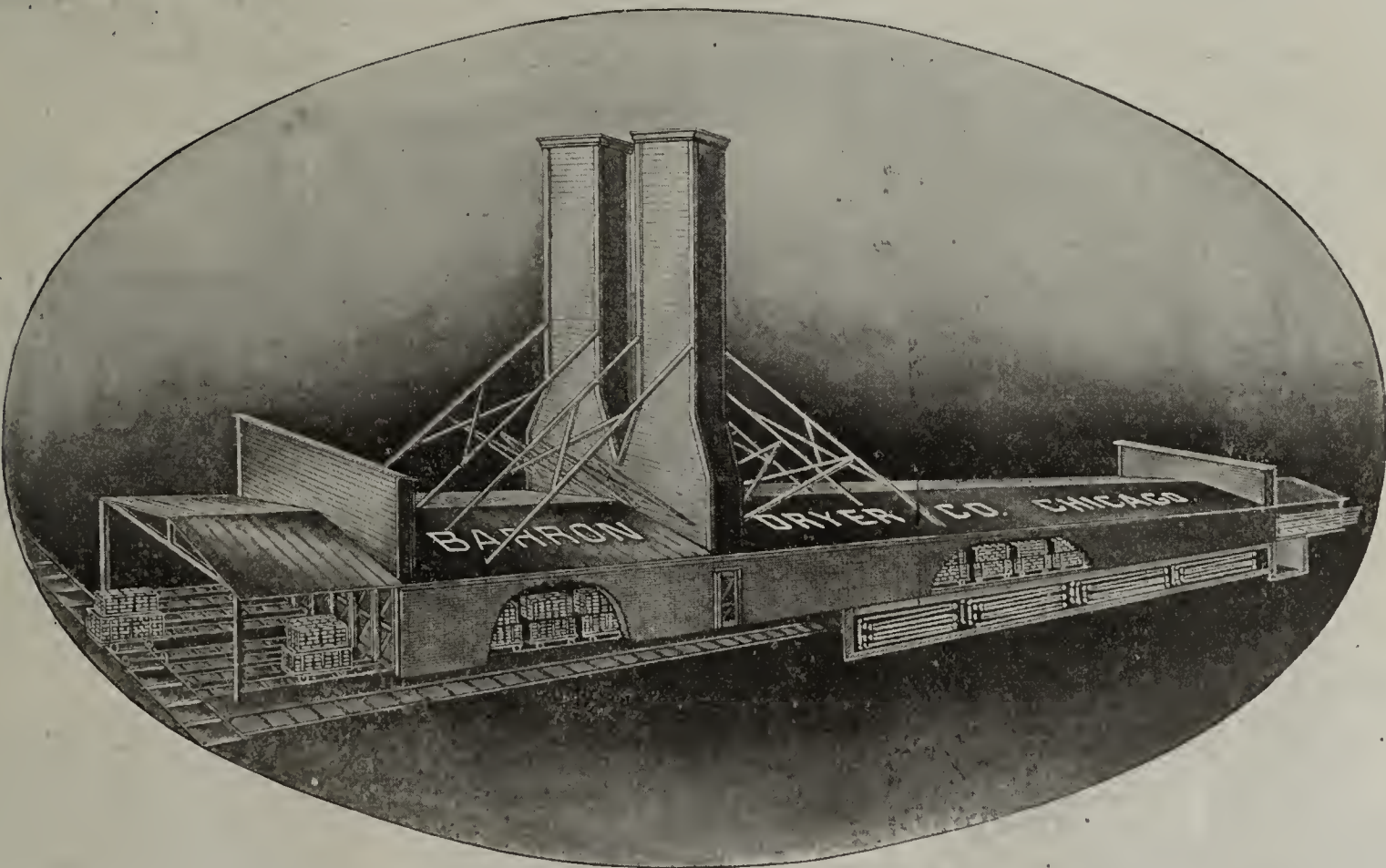
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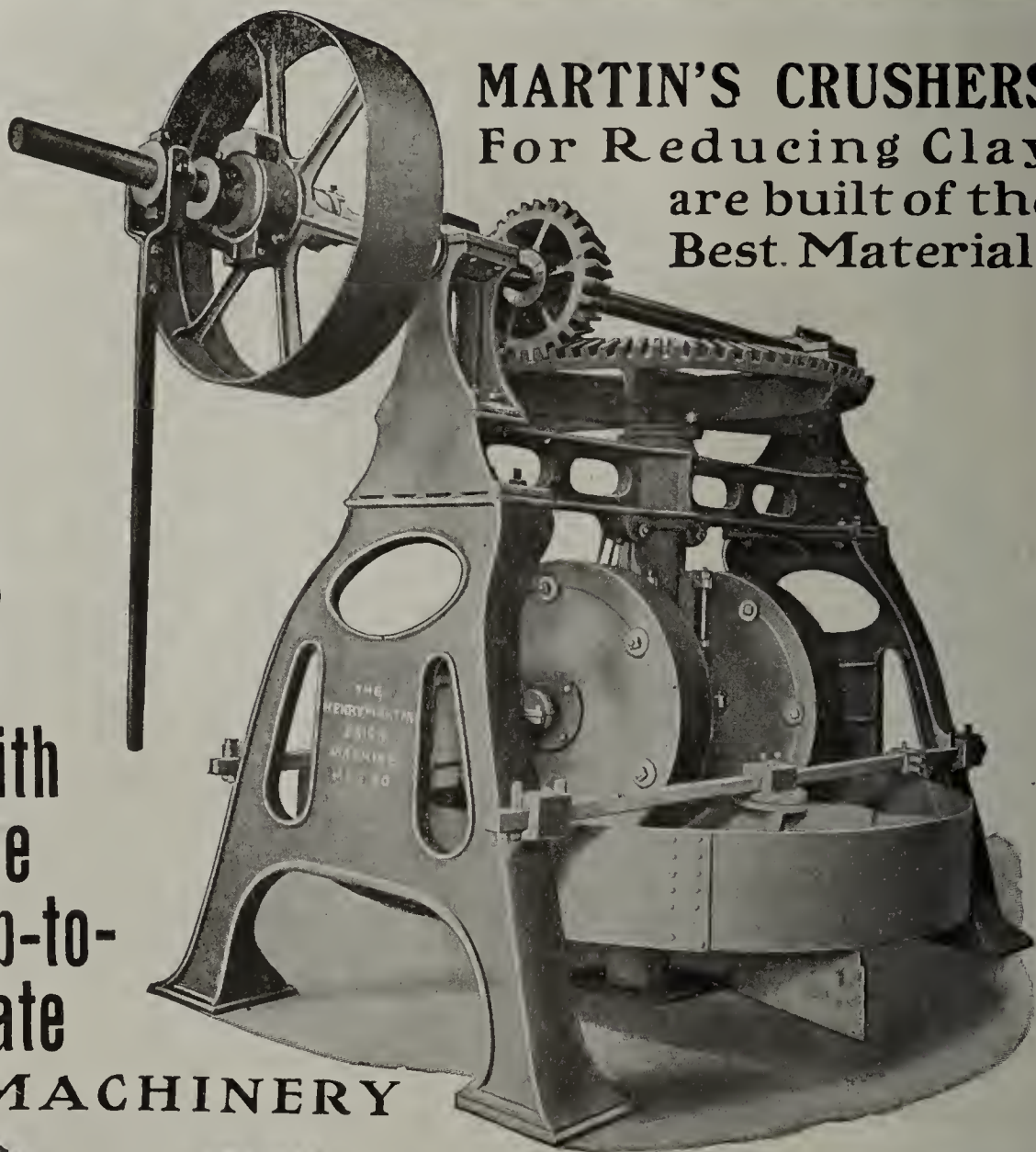
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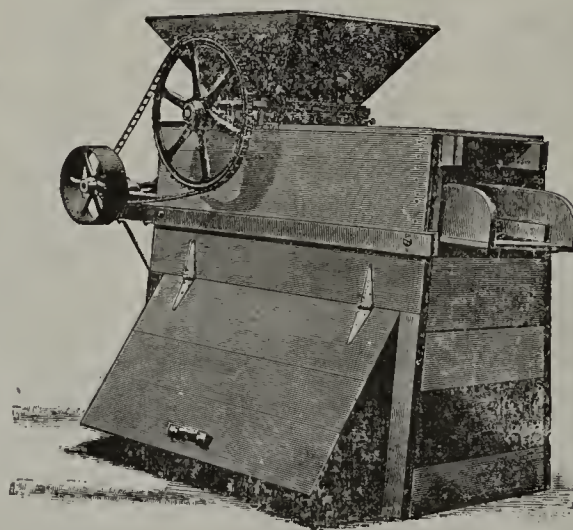
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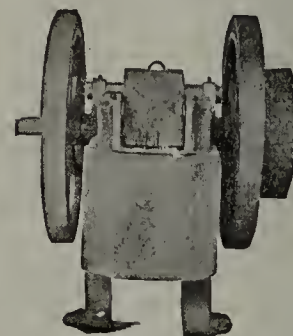
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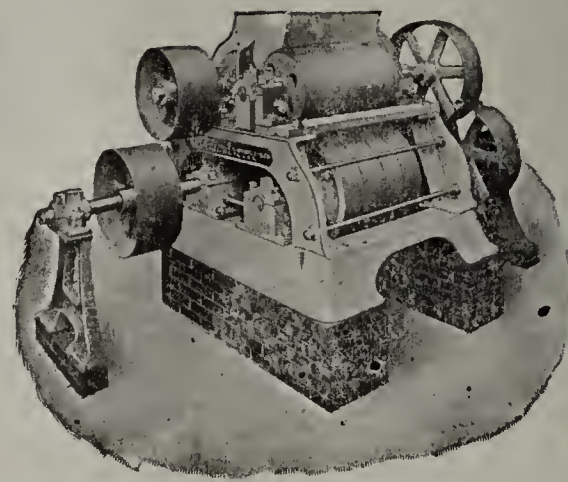
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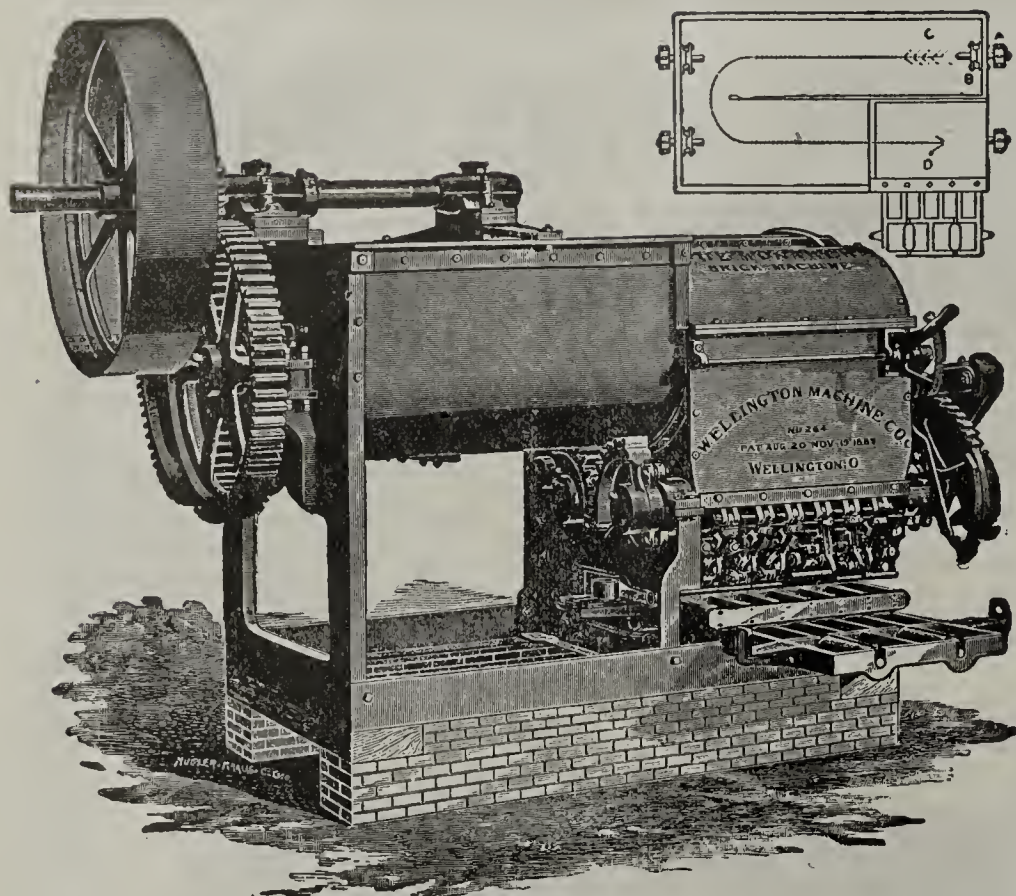
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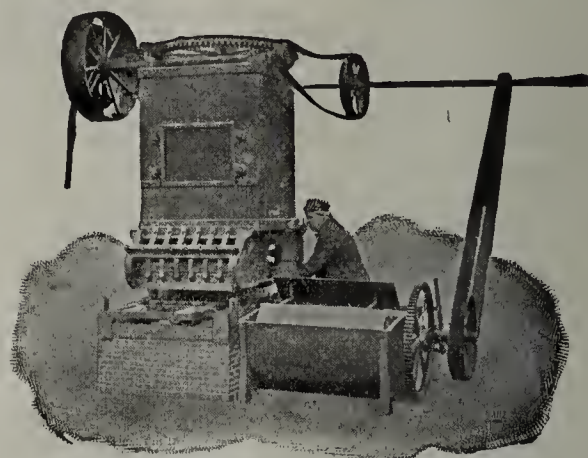
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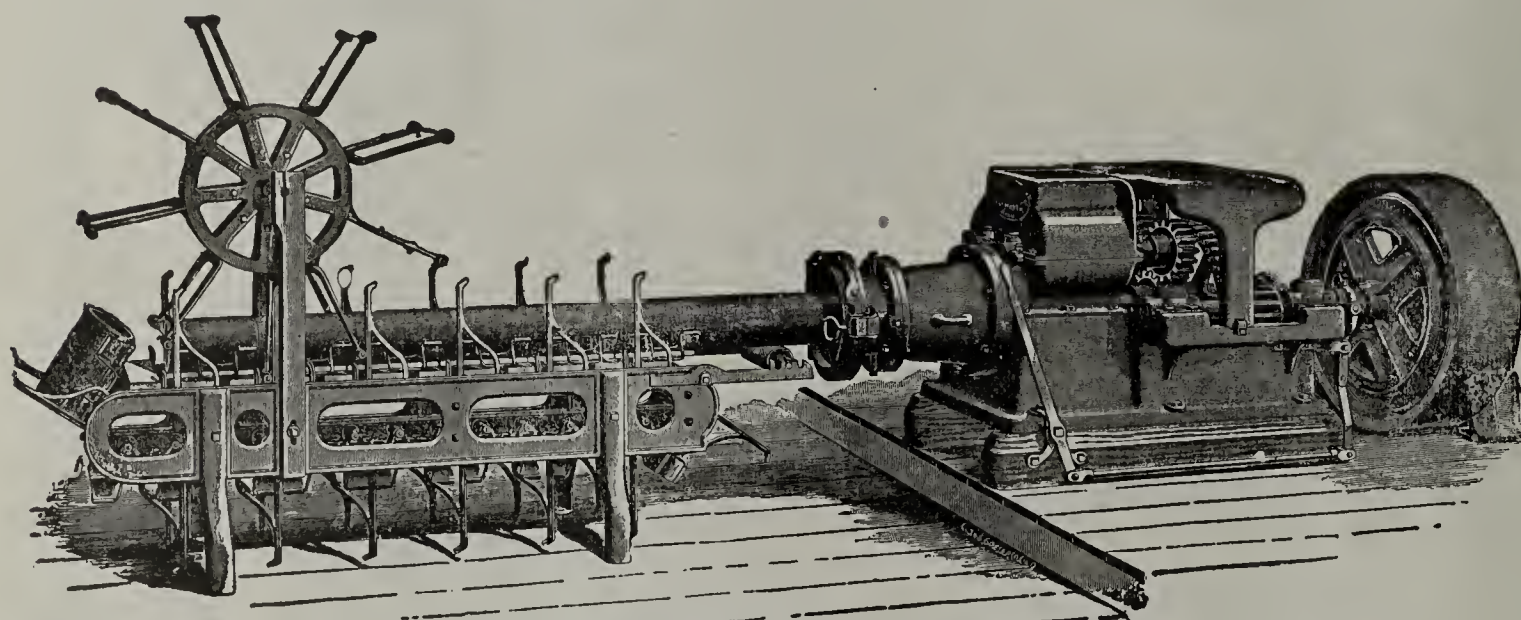
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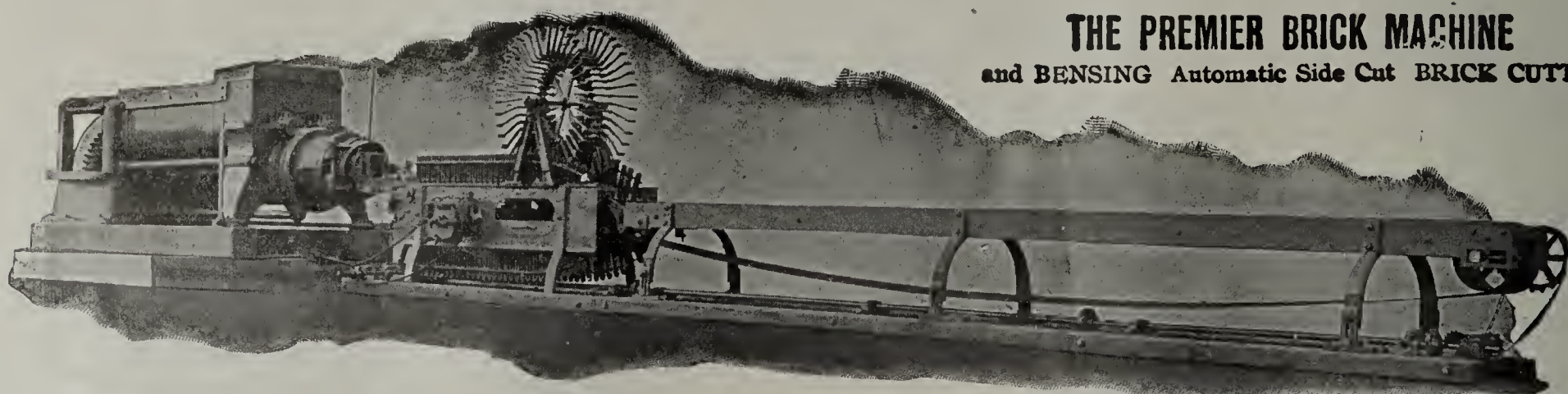


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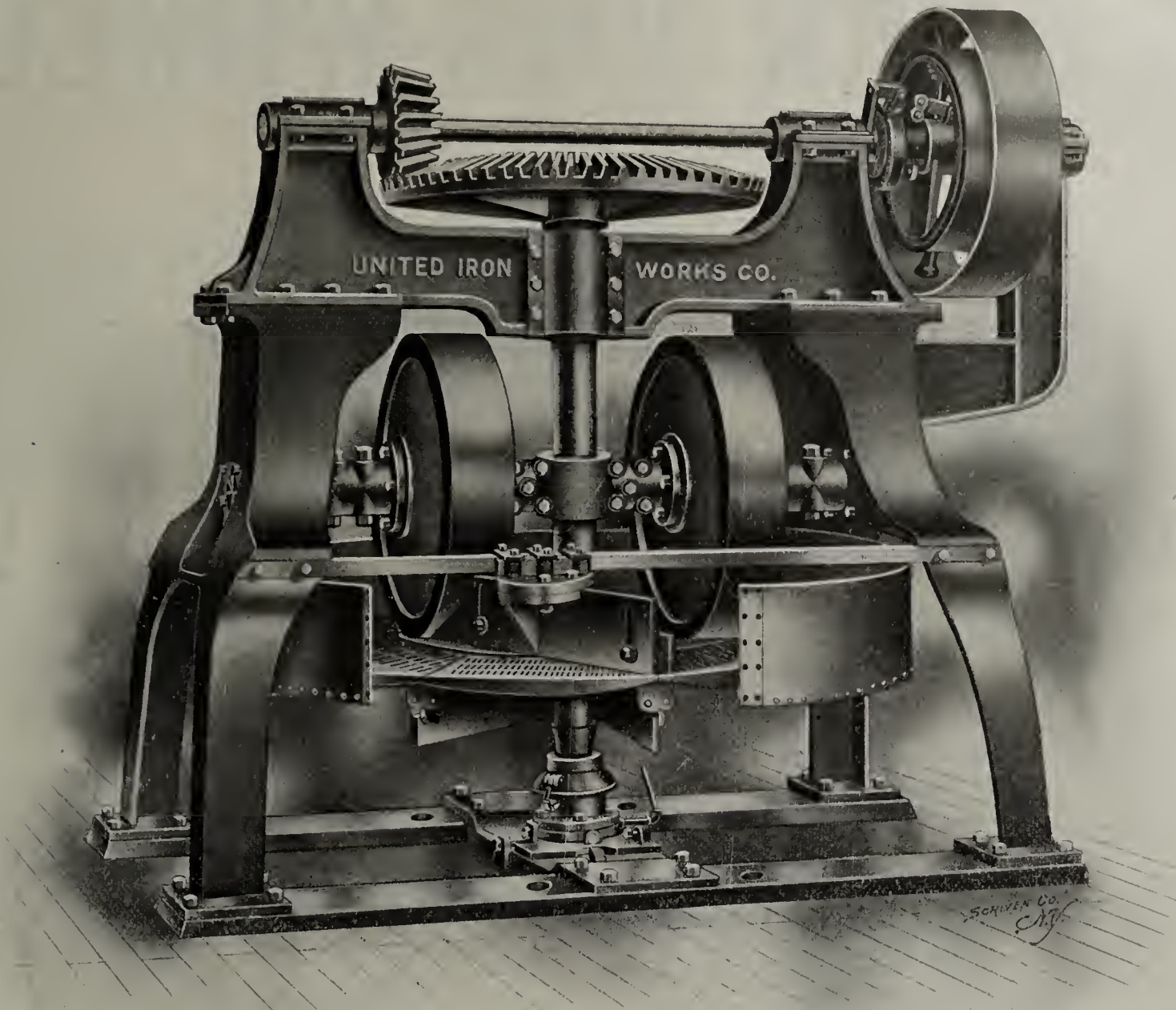
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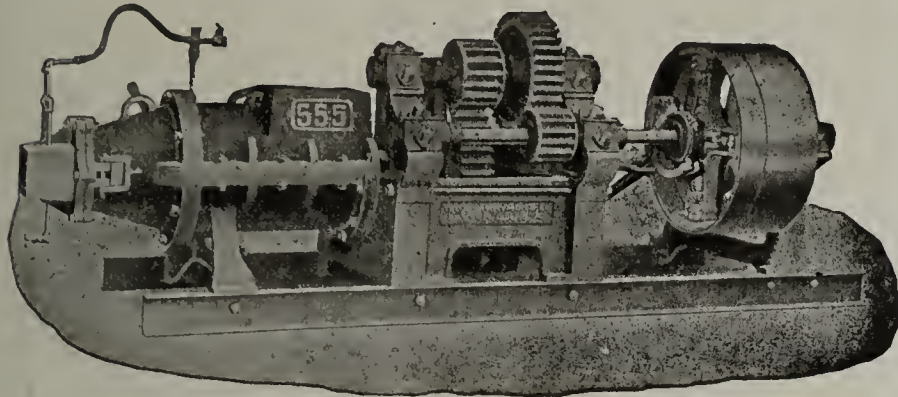
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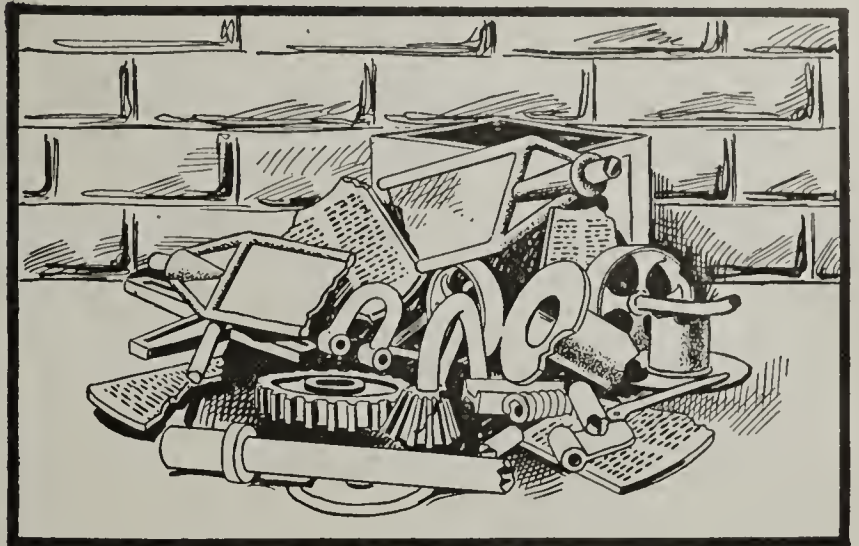
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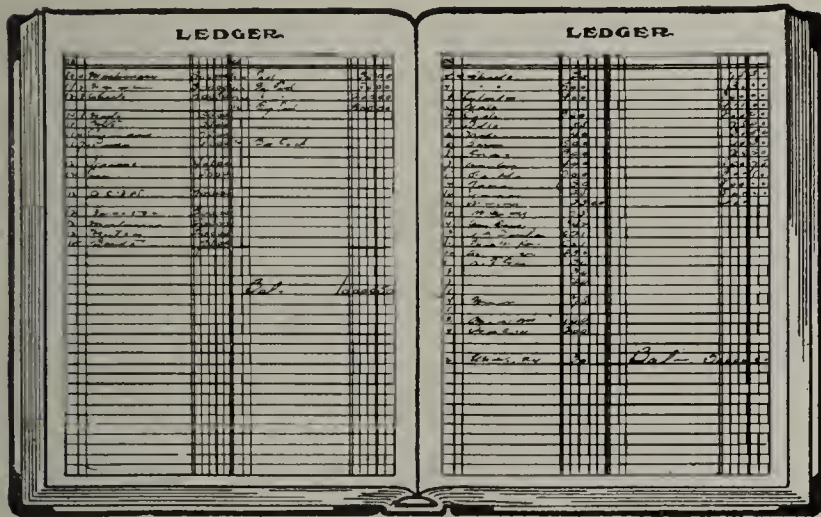
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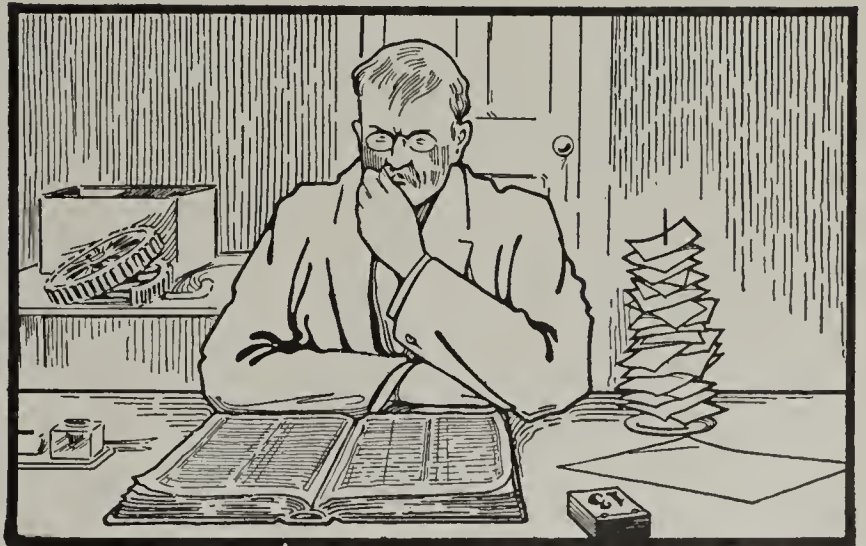
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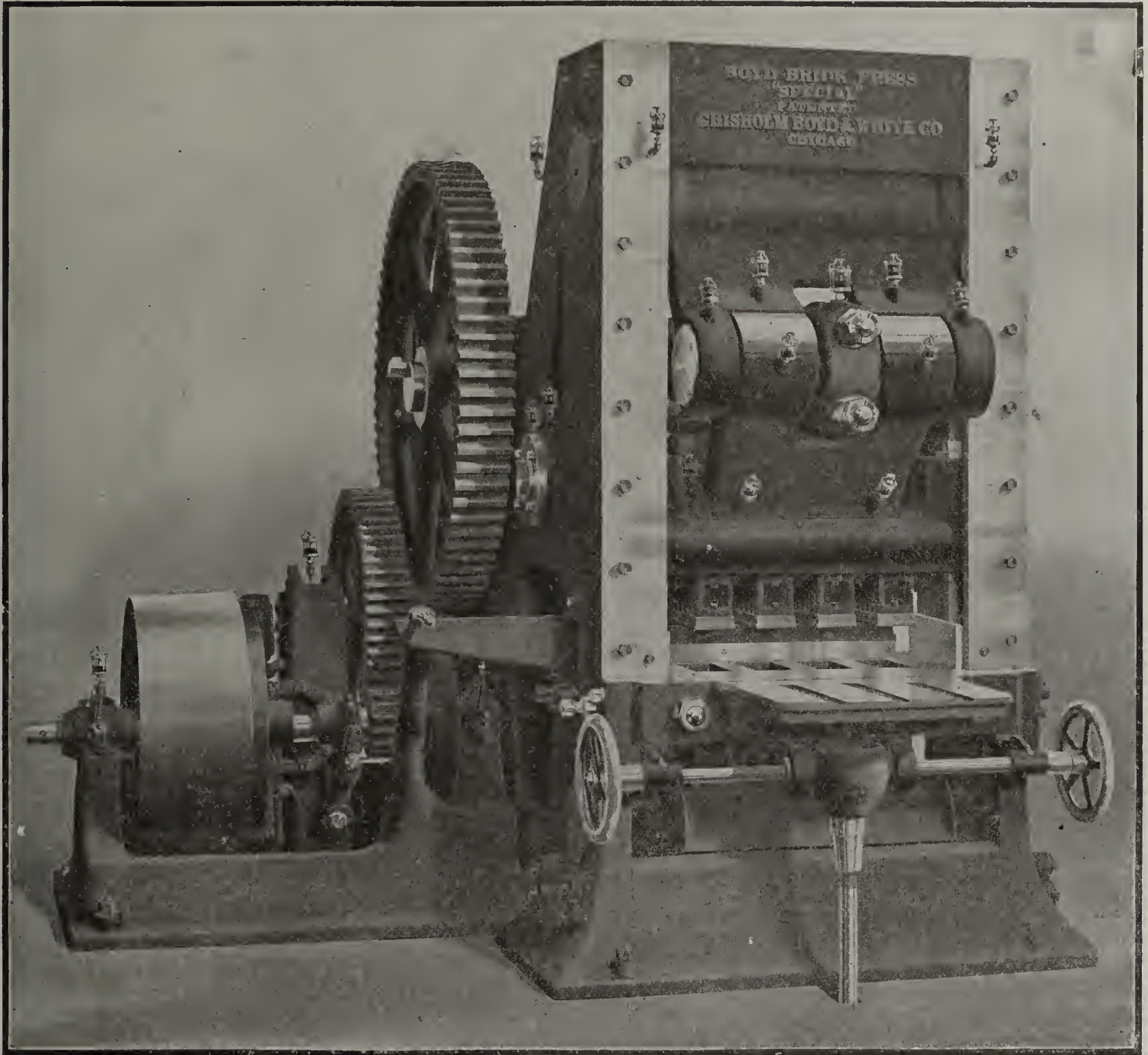
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THE BOYD BRICK PRESS exerts greater pressure, holds it longer, puts more clay into brick, and makes stronger brick than any other Brick Press made. Especially adapted for working shales, and is the only successful machine for making fire brick.

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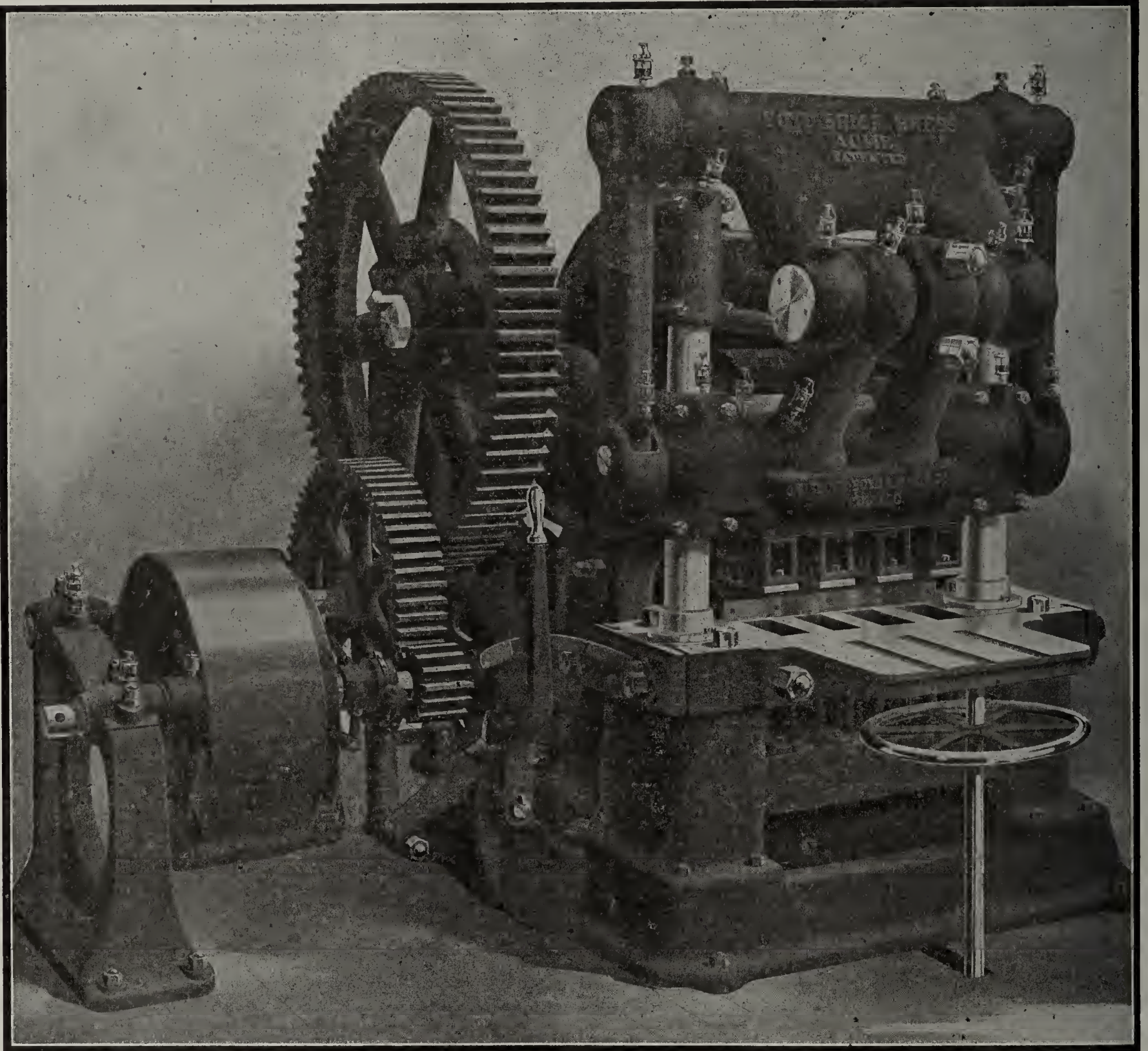
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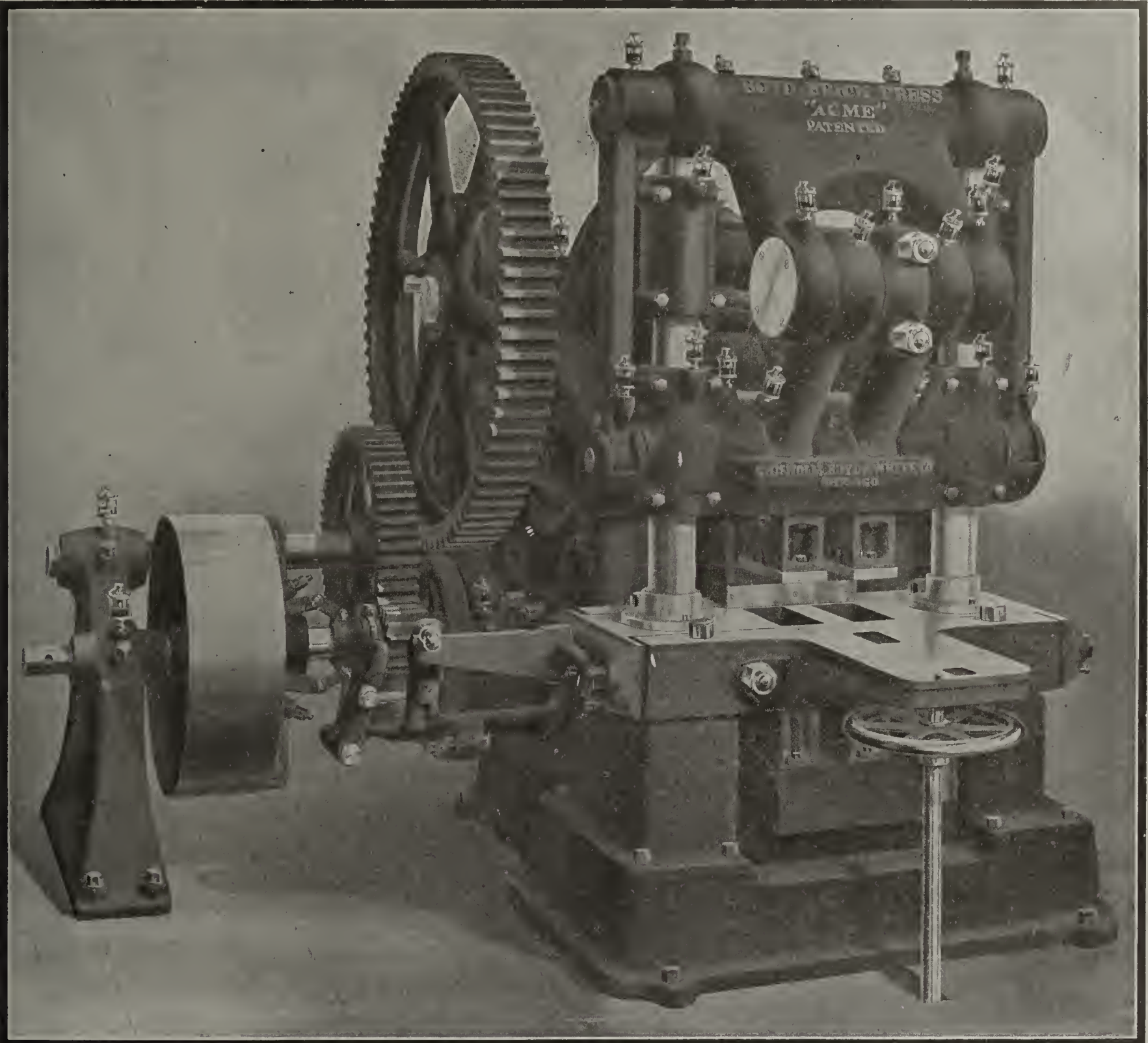
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THE BOYD BRICK PRESS

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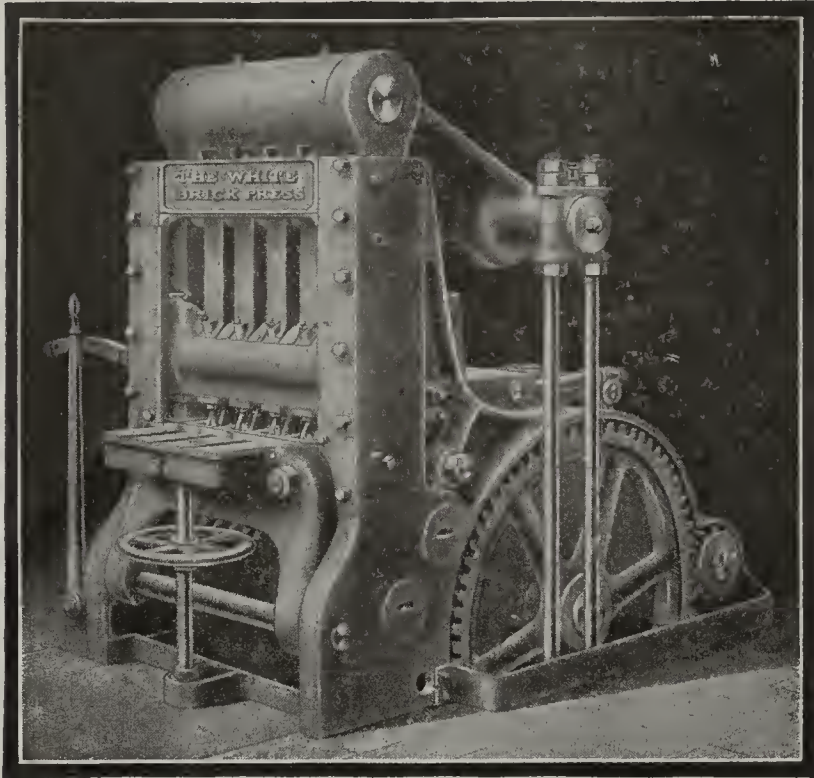
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Especially designed for making Sand-Lime Brick. Strongest, Most Powerful, Most Durable, and Most Convenient. Molds removable; can be changed in seven minutes.

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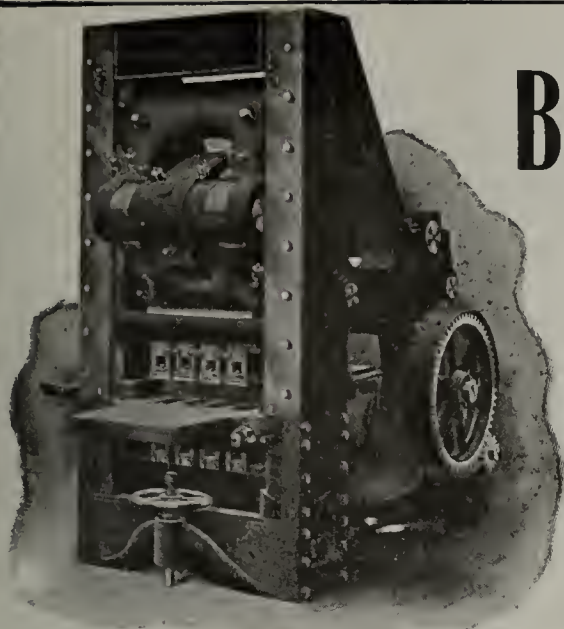
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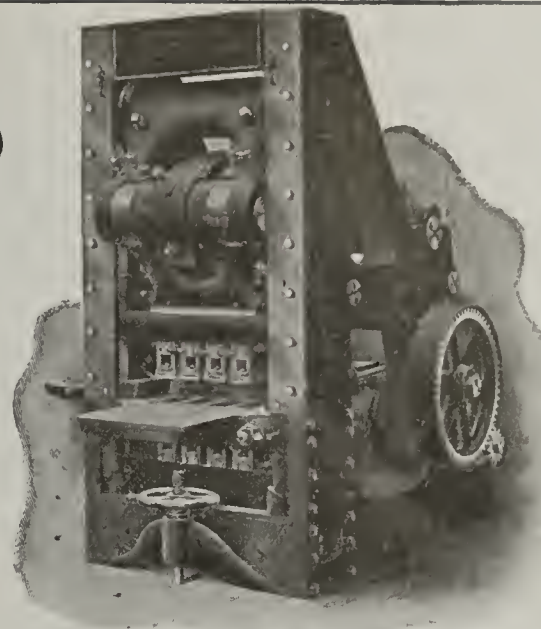
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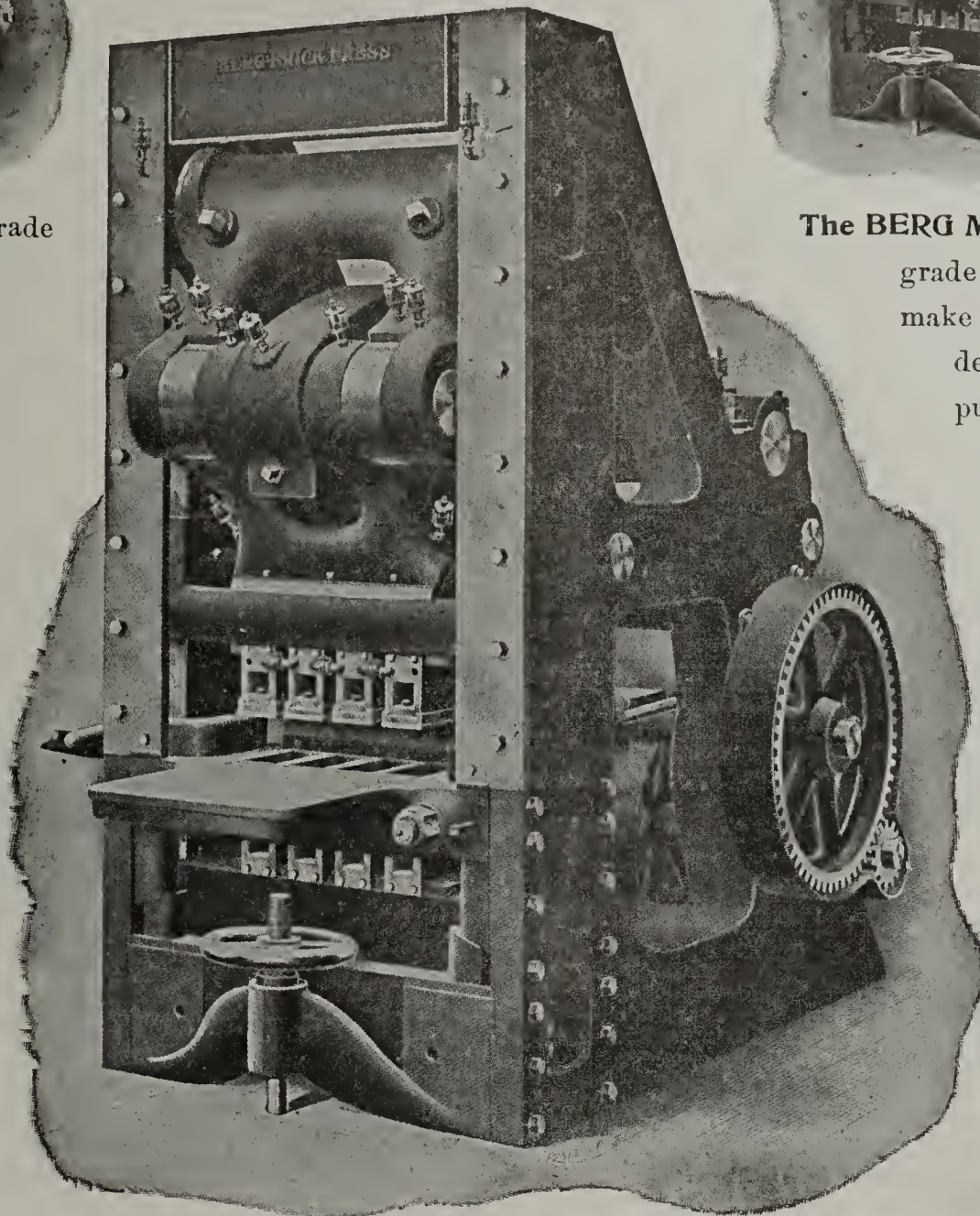


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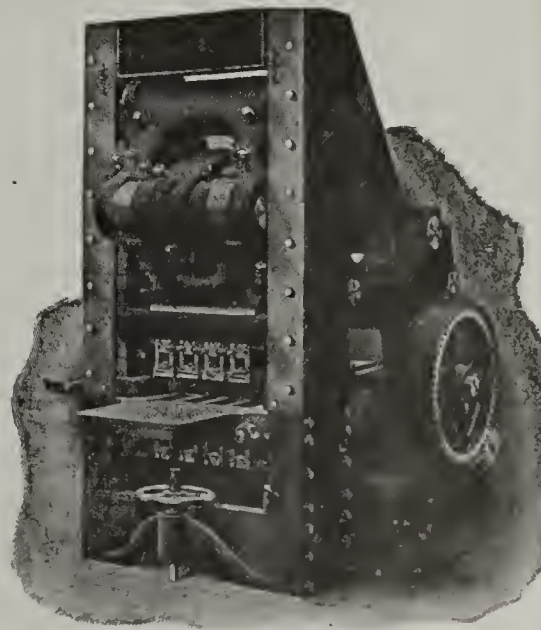
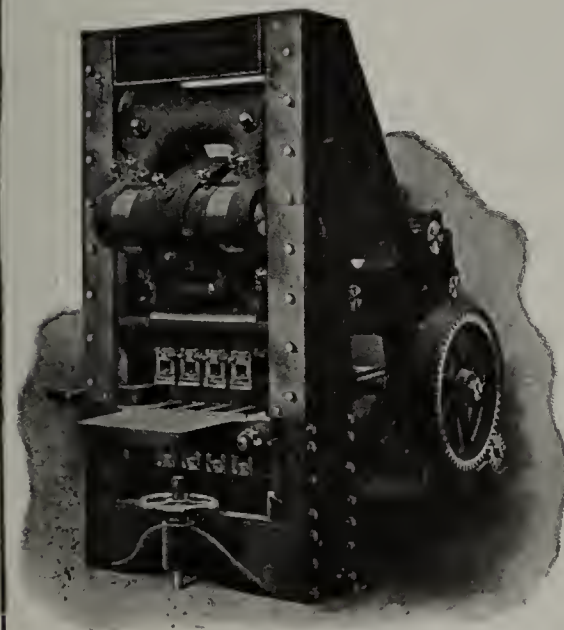
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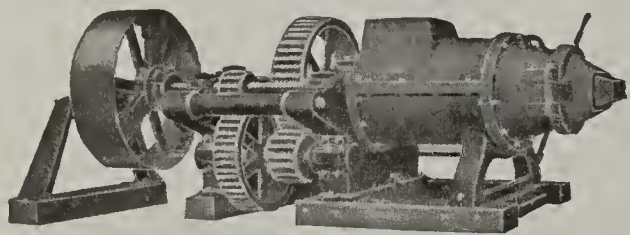
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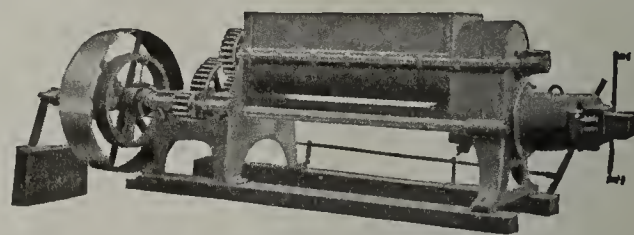
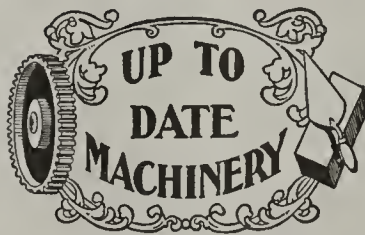
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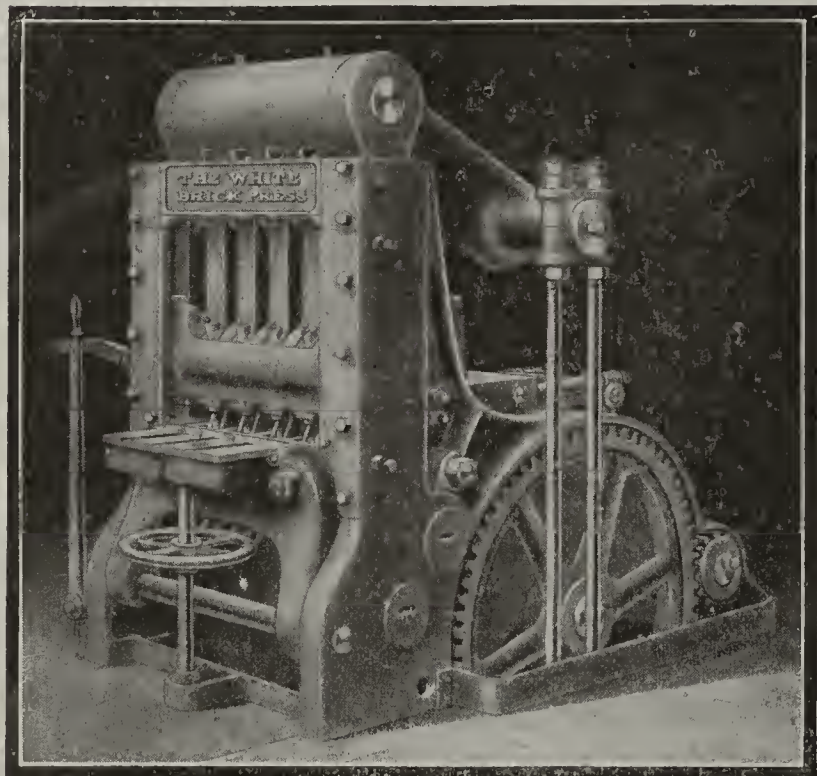
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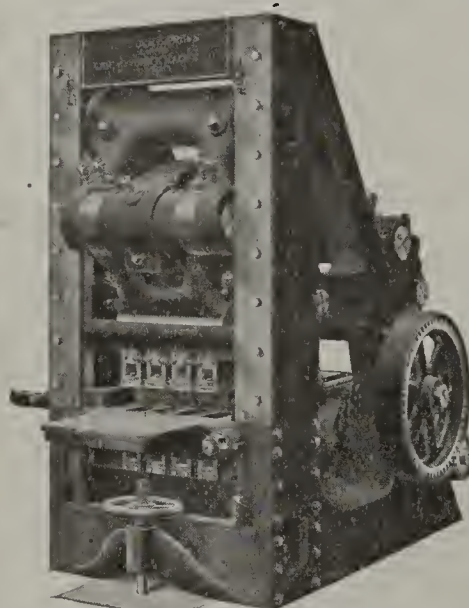
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For Making all Kinds of Brick—
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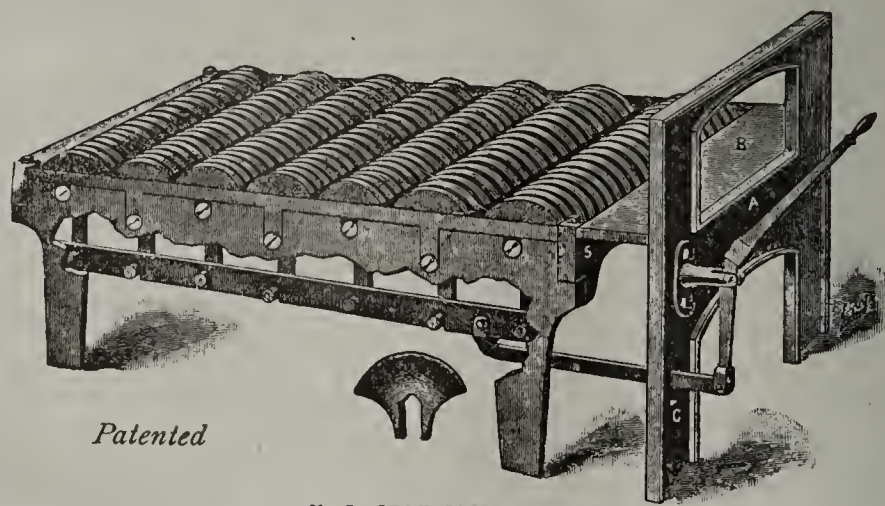
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In addition to our well known BERG PRESS, we are now bringing out our new WHITE PRESS for clay-brick work. It is especially recommended for difficult and refractory clay. By far the most powerful press built. Removable molds, changed in SEVEN minutes. Special catalogue and full particulars on application.

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Rocking and Dumping Grates for Kilns. Save coal, save labor, and do away with checked brick. Send for "Lecture on Combustion," by His Satanic Majesty.



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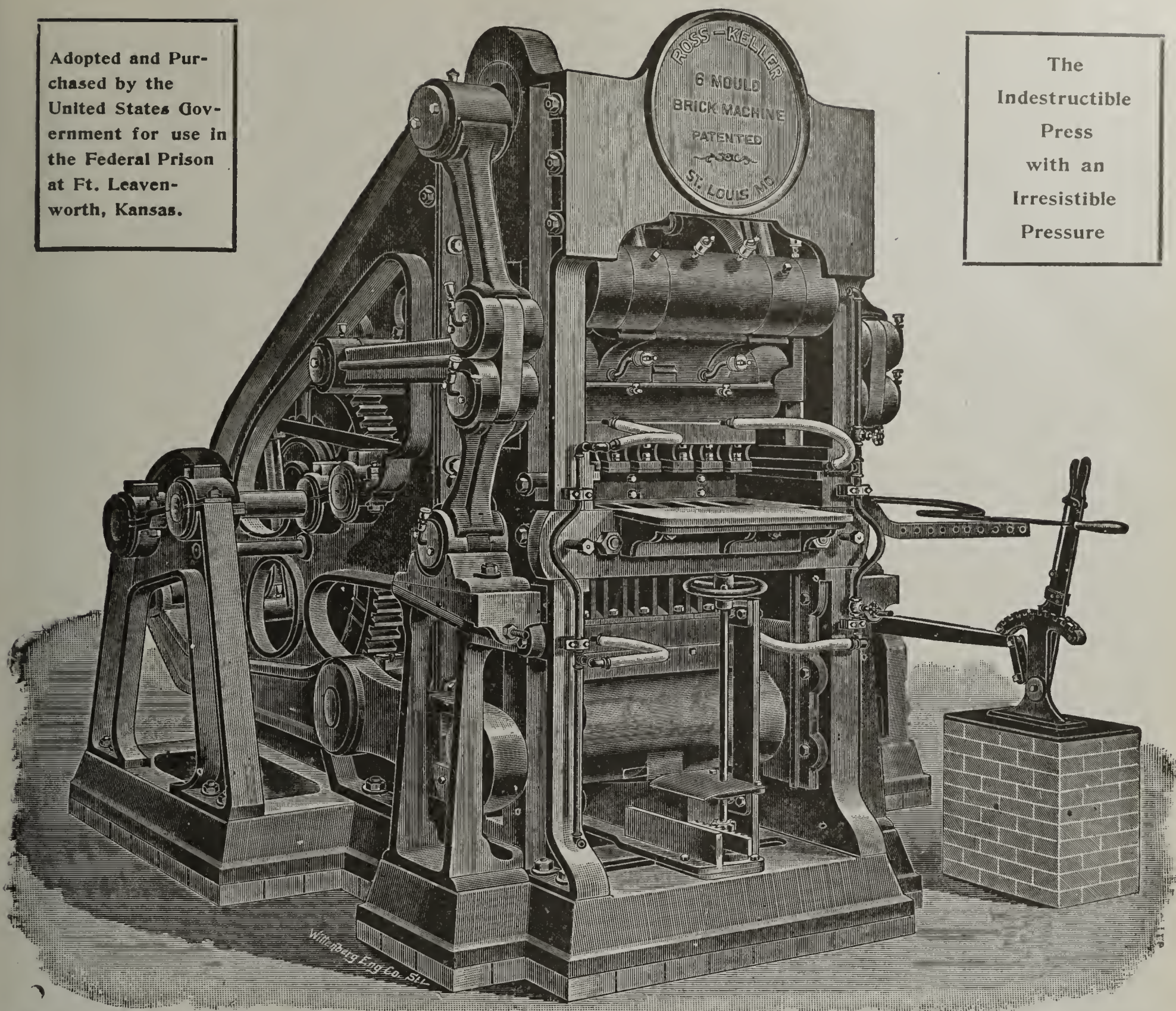
U. S. SELF CLEANING GRATE
In position ready for use. Part of frame cut away to show connection below.

Chicago Brick Machinery Co.

1308 Great Northern Bldg.

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The Indestructible Press with an Irresistible Pressure



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The strongest and most efficient Brick Machine made, and the only Press that gives three distinct pressures to the brick

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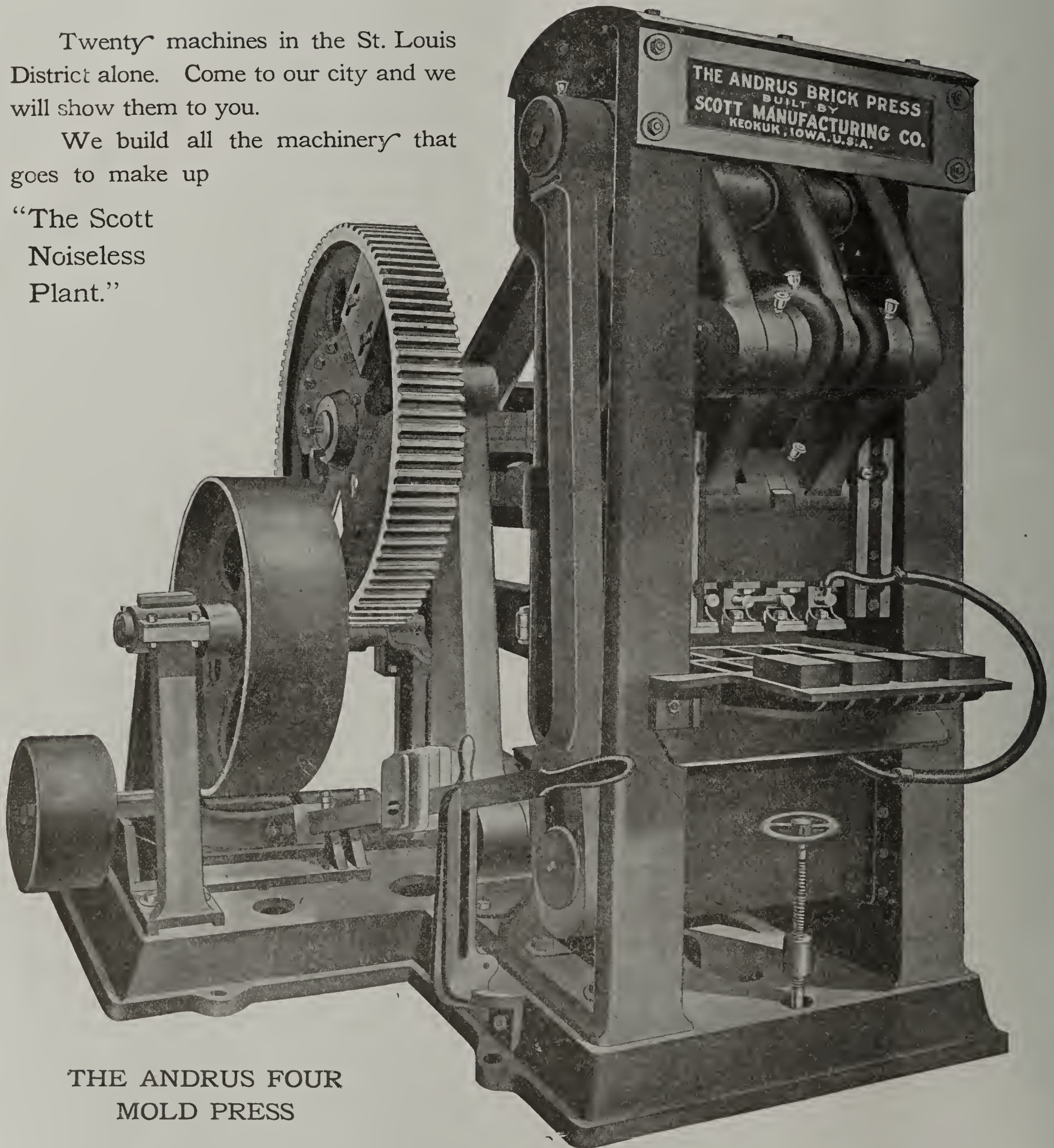
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This is the Press That Scott Builds

Twenty machines in the St. Louis District alone. Come to our city and we will show them to you.

We build all the machinery that goes to make up

"The Scott
Noiseless
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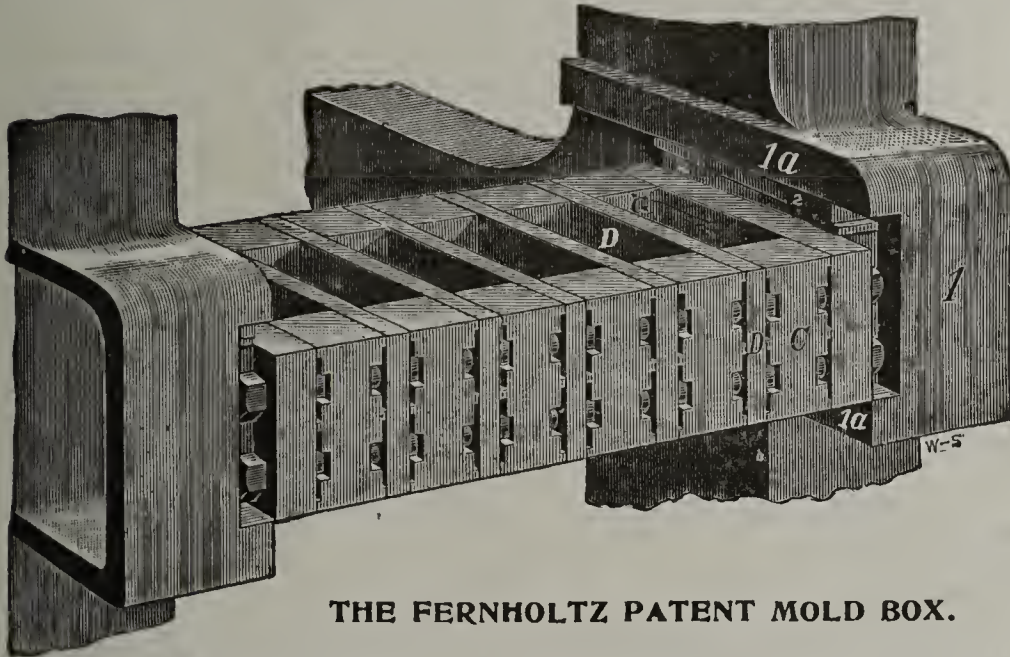
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Four mold Press 20,000 daily capacity. Six mold Press 30,000 daily capacity

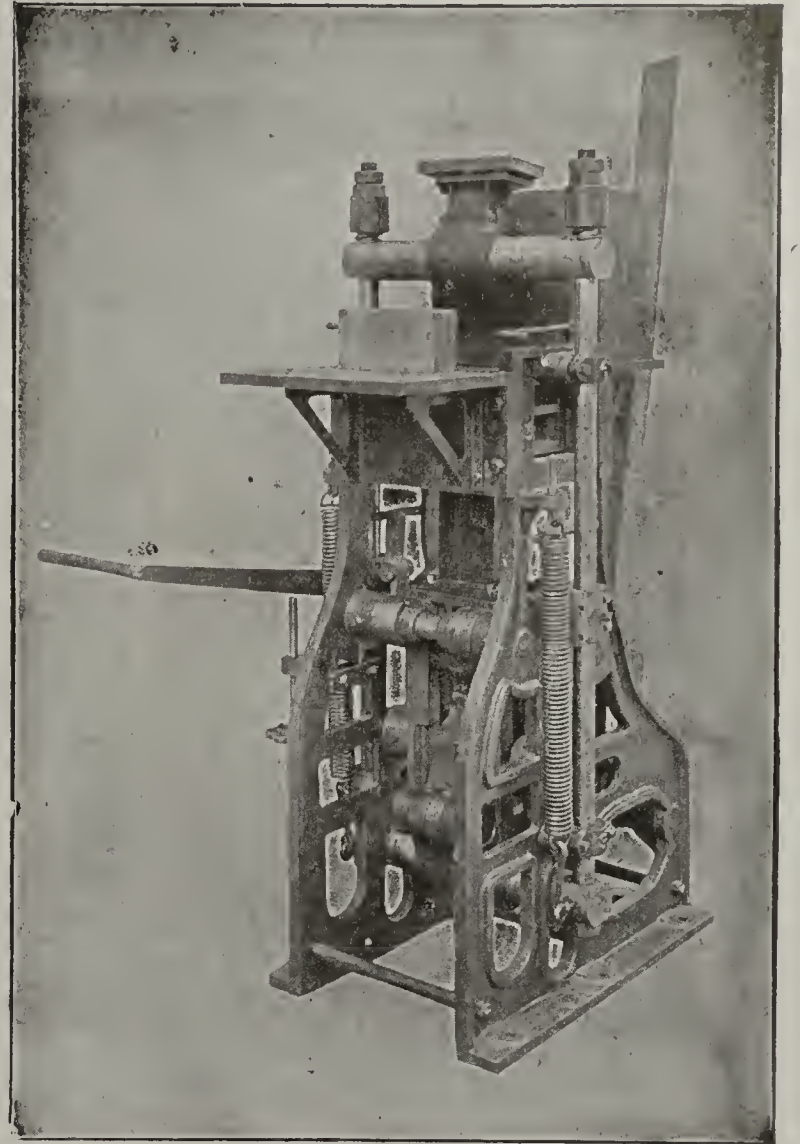


THE FERNHOLTZ PATENT MOLD BOX.

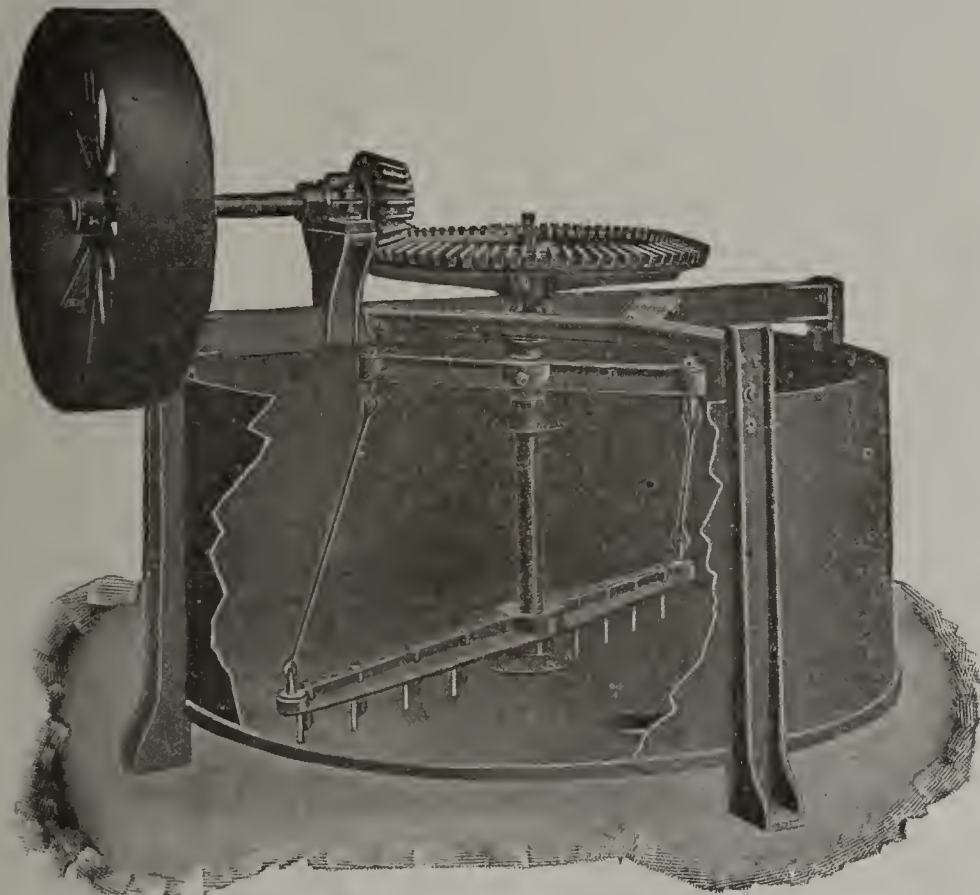
No old style Liners. The Blocks are adjustable and molds are always one size. We have put them in most all makes of Dry Press machines. Easily and quickly adjusted. They are made entirely out of chilled iron, the hardest known metal.

GRATH PATENT HAND POWER PRESS.

Especially adapted for ornamental designs. Any size brick up to 12 $\frac{5}{8}$ inches long, 10 inches wide and 4 $\frac{1}{4}$ inches thick. Brick set into kiln direct from press.



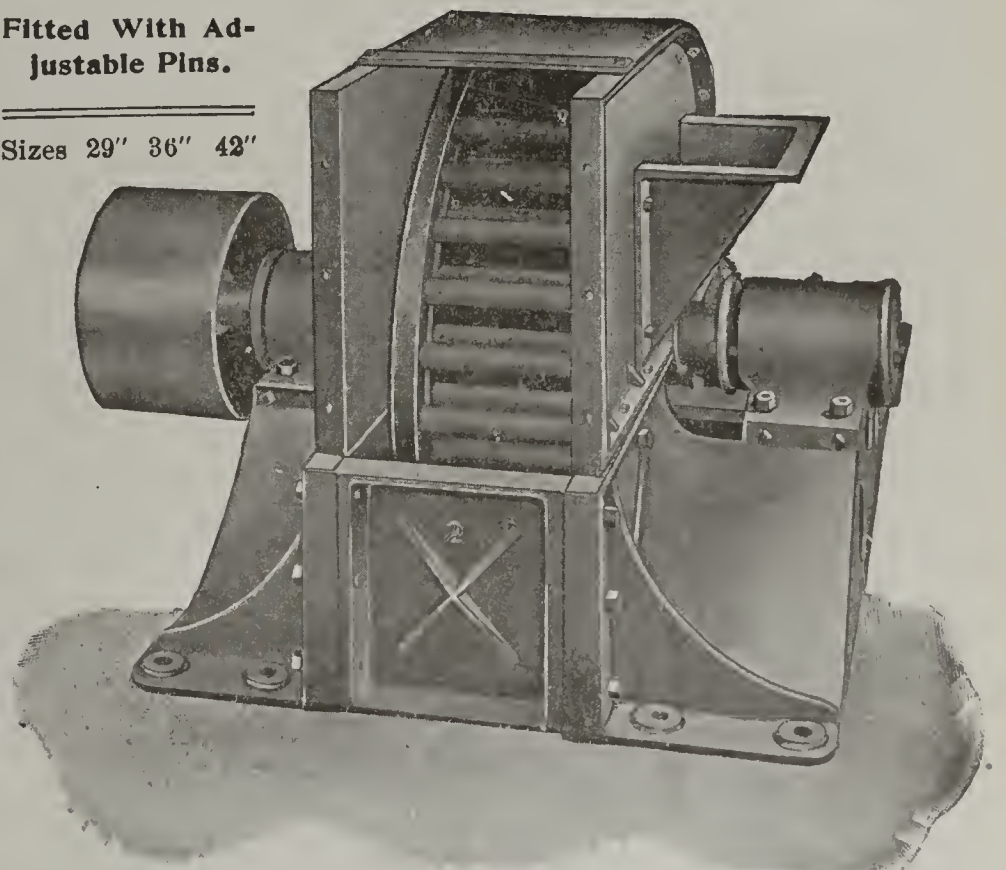
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OLD STYLE TOGGLE MOVEMENTS SUPERCEDED BY NEW
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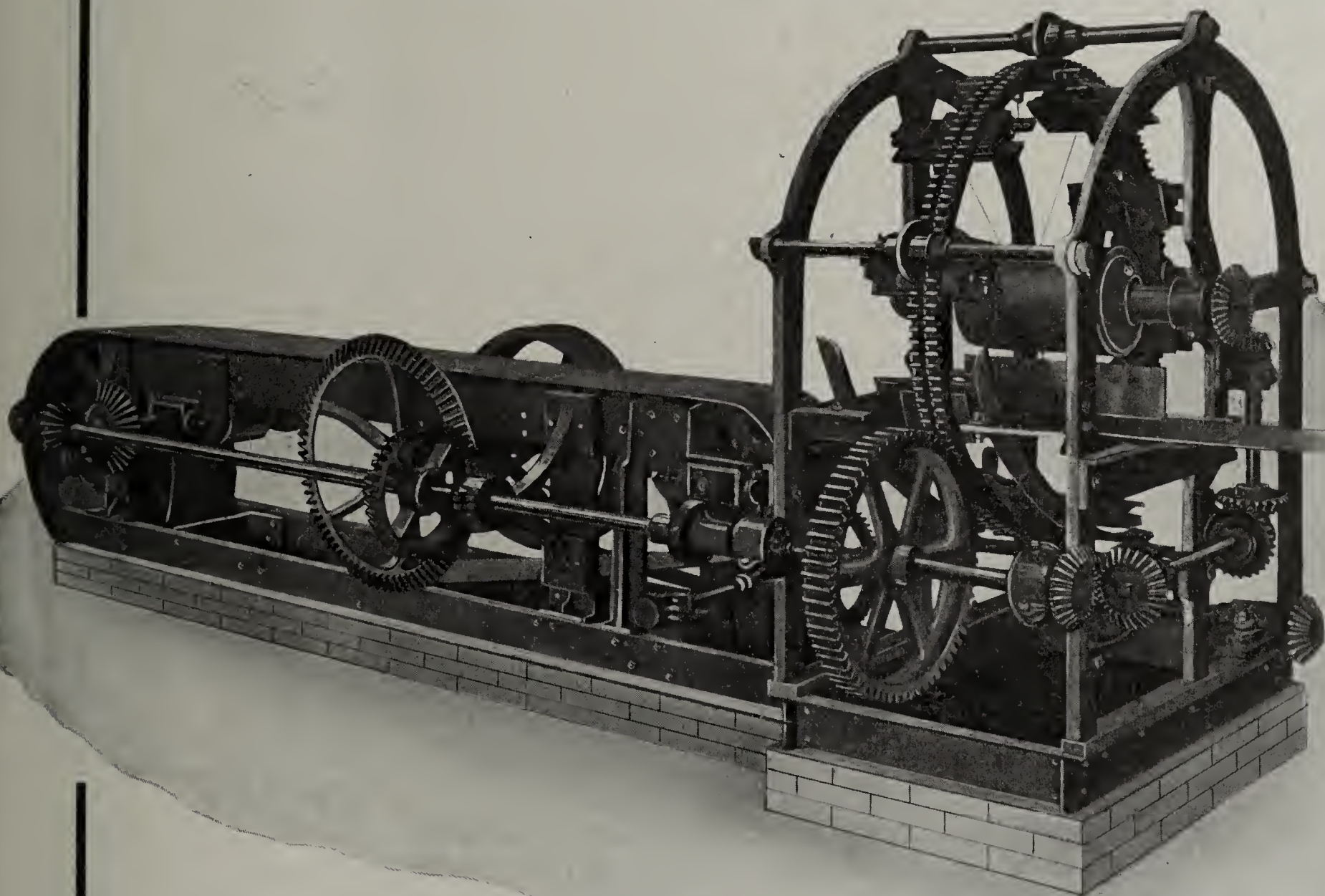
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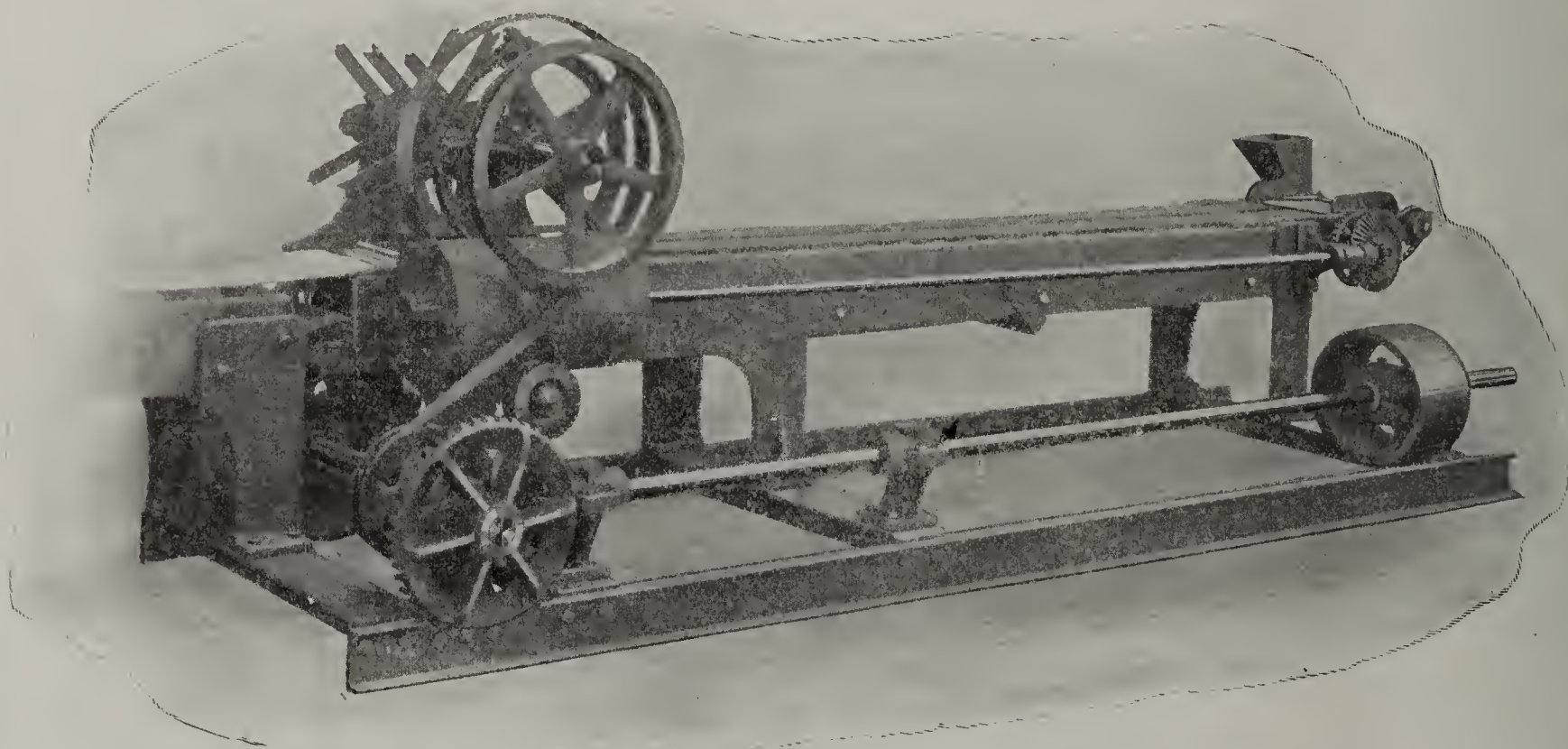


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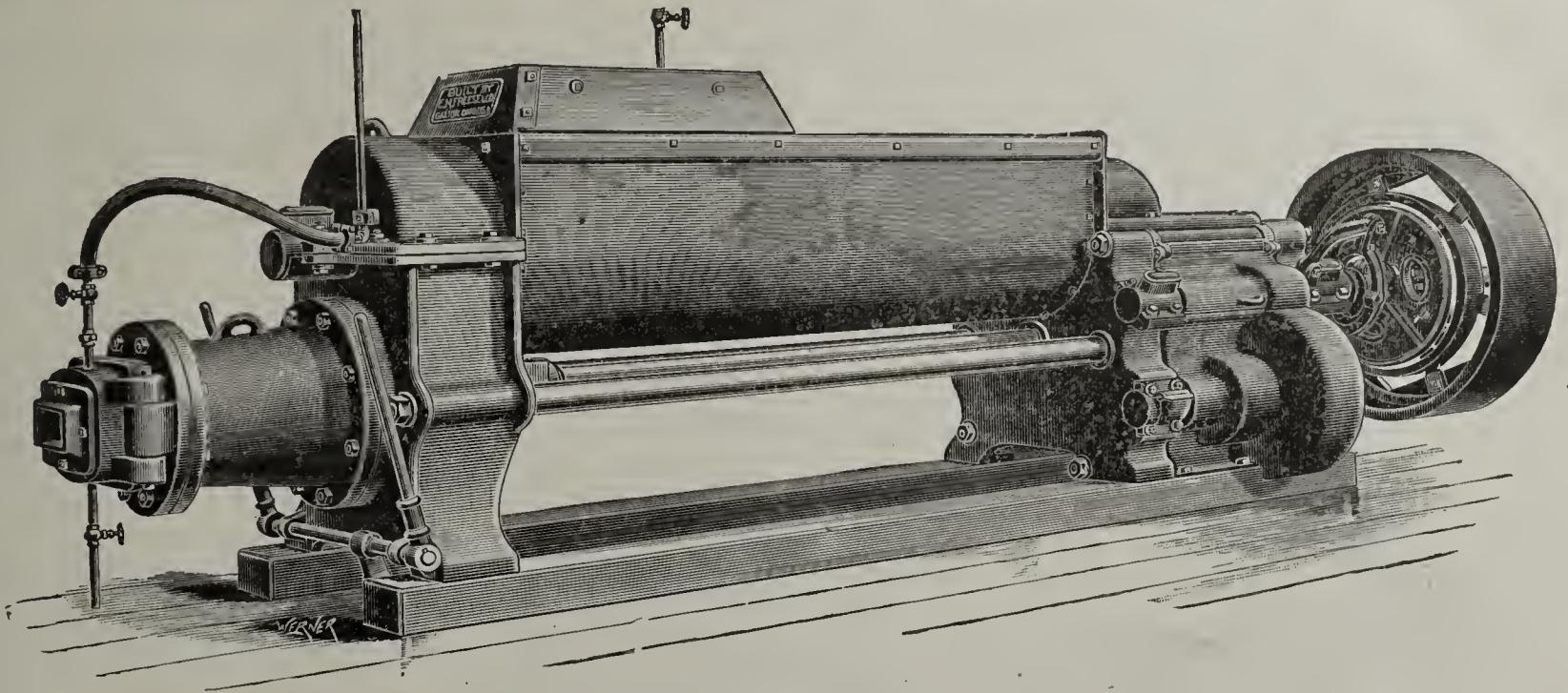
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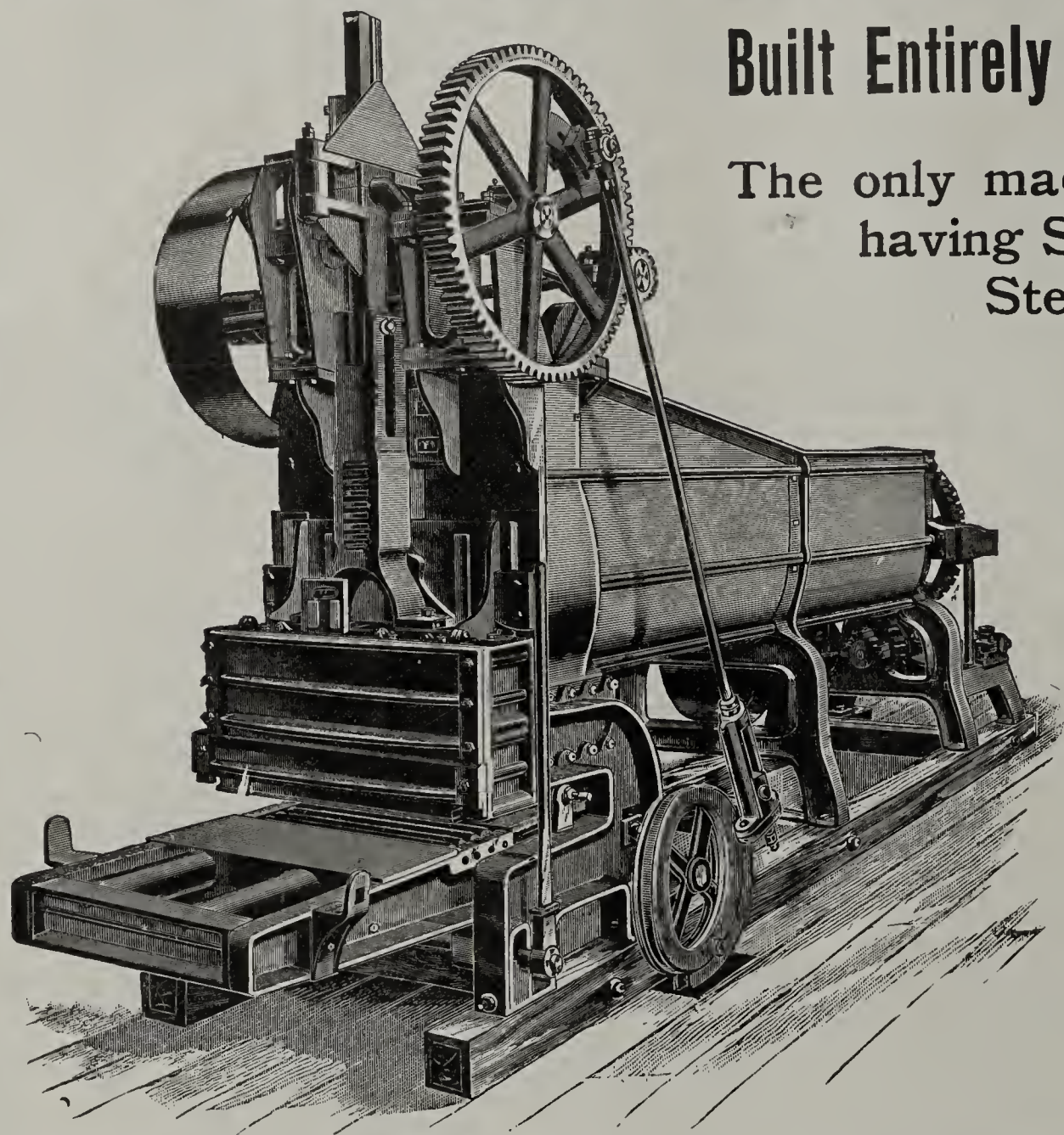
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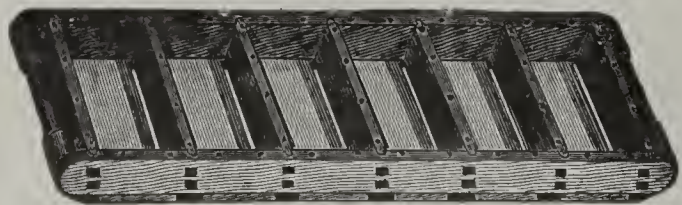


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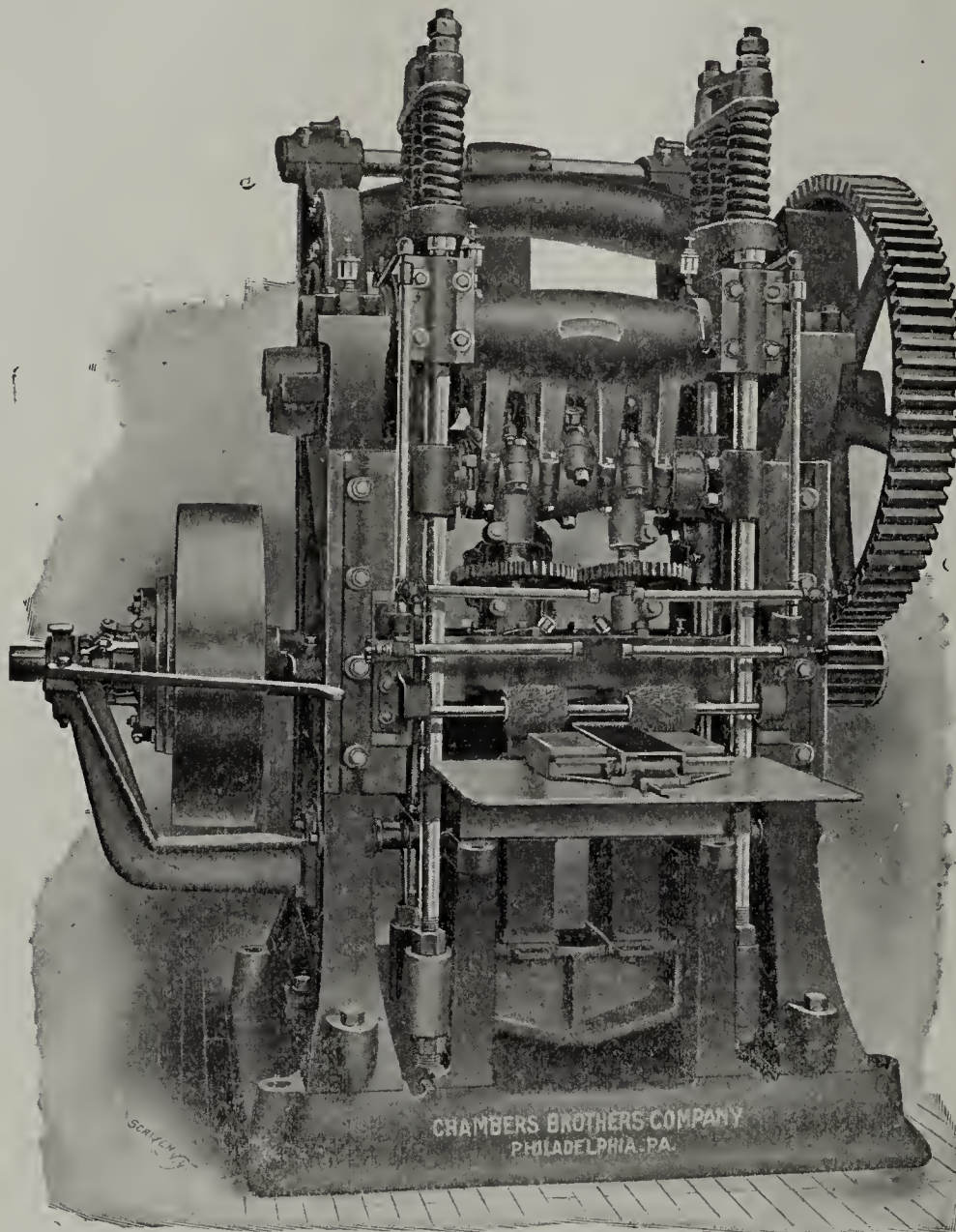
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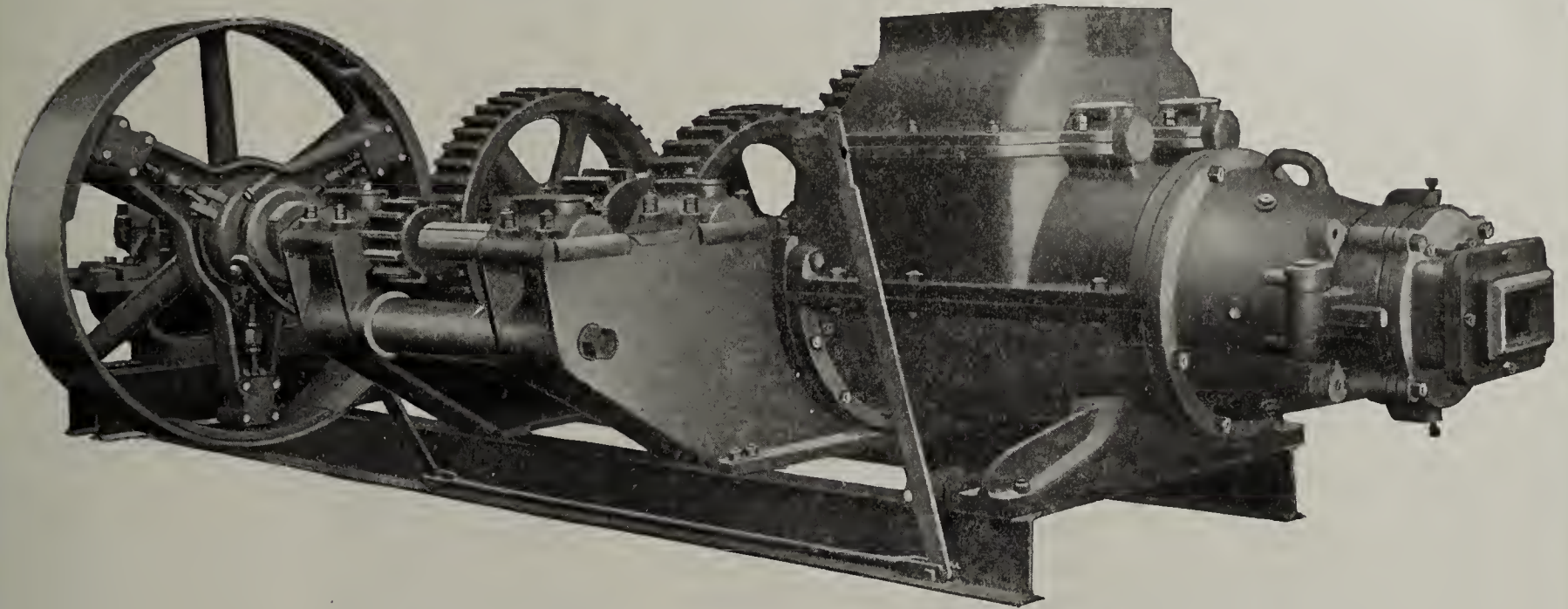
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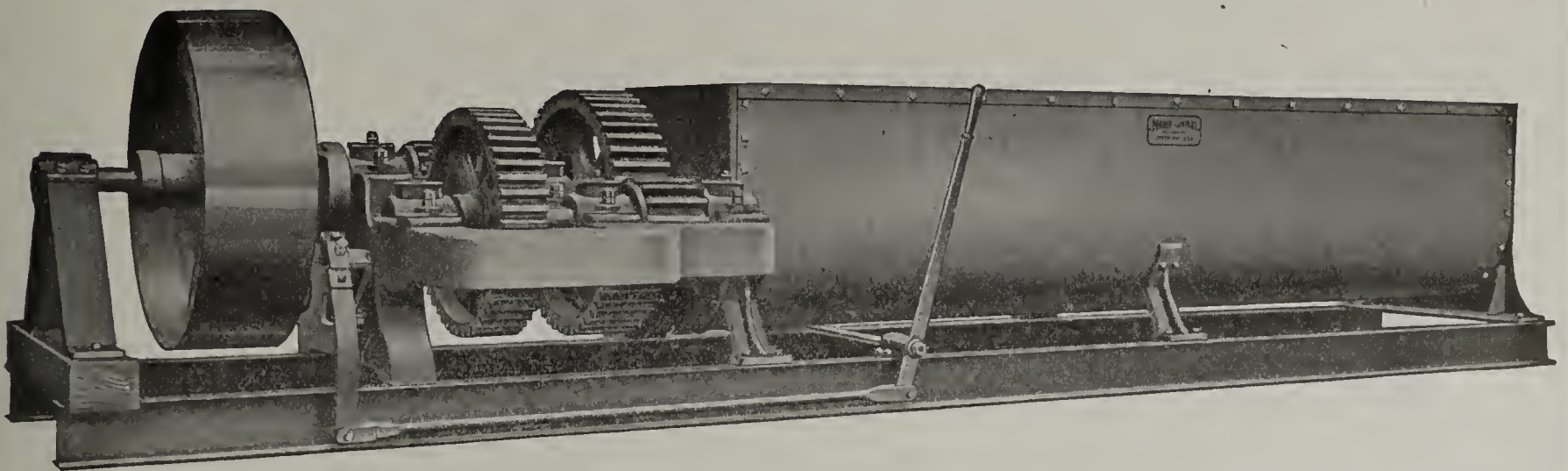
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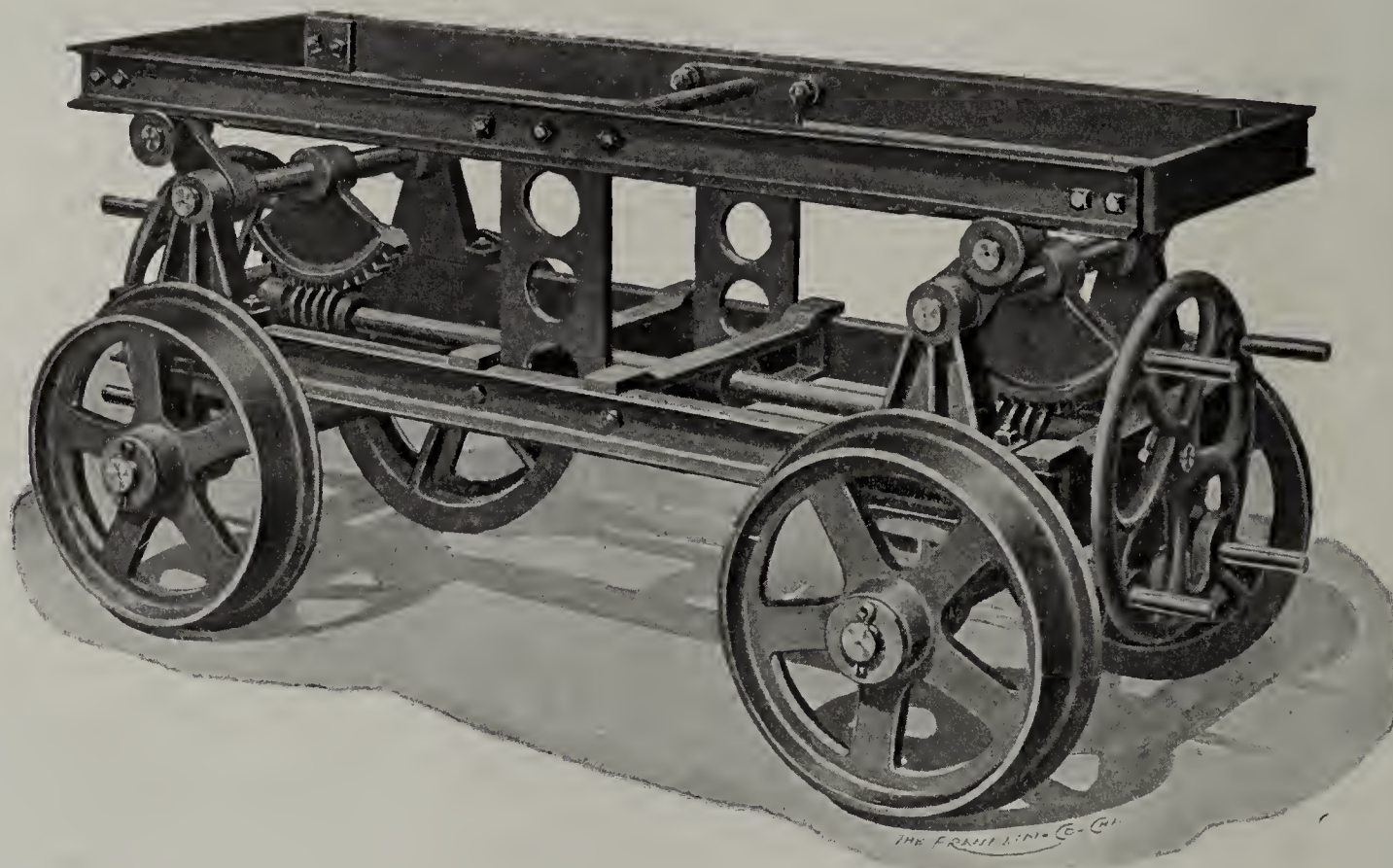
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Vol. XXX. No. 3.

CHICAGO, FEBRUARY 14, 1907.

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Single Copies, - 10 Cent.

**A REPORT OF THE TWENTY-NINTH ANNUAL
MEETING OF THE ILLINOIS CLAY WORK-
ERS ASSOCIATION,**

Second Session.

On Wednesday, January 23d, President Stipes called the second session of the Illinois Clayworkers' convention to order at 10 o'clock. He said that instead of adhering strictly to the program for the morning session he would call upon Mr. W. D. Gates, of The Gates Potteries, of Terra Cotta, to speak on "Teco Ware." (Applause.)

TALK ON TECO WARE.

Gentlemen of this convention:—I do not like to make apologies. I very seldom do, but I really feel ashamed to come before you gentlemen this morning, for I have been down on your program several times before but have been unable to be with you. This time I made up my mind that I would get here. Sunday I was in the South picking plum blossoms off the trees. I have been away from home for a week. It will not take me very long to tell you all that I know, and I hope that I will stop when I have told you that little.

On the subject of Teco ware, I am before you even without a specimen of the ware. I came up from the South intending to go to Chicago and come from there here. I wanted to have something to show you, because it is almost impossible to talk about a ware and not show it. As to the Teco ware, I have been like all of you. I believe that a man, when he gets into this business gets so thoroughly instilled with the possibilities of the material that he is handling that he does not know when to stop; he believes in it and goes on confident that he can accomplish what he undertakes with it. I went into this business something like twenty years ago. I remember in my earlier days in traveling around, generally with a sample of my clay in my pocket, I was down in Ottawa but this time without it. I said to the owner of a plant, "I am sorry that I cannot show you a sample of my clay." He said, "I could not tell you anything about it if you did;" I have been in the business twenty years, but I could not tell you anything about it until I had burned it; go out and get some young men who are starting in and you will get a good deal of information from them about it." (Laughter.)

I had rather a serious introduction into the business. I had no very clear idea of what line I wanted to follow,

and after college I dropped into that of law. I went through the law school, opened an office, got a good library, but I didn't know what was the matter. I discovered after a time that I was the only one who knew that I was a lawyer, and sometimes since then even I have been doubtful whether I ever was one or not.

Then I got to dallying with clay. It was attractive to me and I could not let it alone. I tried to forget it, but could not. I put in two or three years of experimental work. I started a tile factory to make tiles of clay in a certain location, though some of my friends thought that I was not needed there because they had factories right near me. I satisfied myself that I could make terra cotta. I built a plant. In that business each particular line is a department by itself and you have got to get a working force in each of the departments in order to do business. Then I went out to get orders. It took me some time to get myself straight on that, but I discovered this condition of affairs, that the men that knew me best would do the least business with me. That is an embarrassing confession to make. But suppose I had known a man and he recollected the time when I was a lawyer. He would say he wanted his building and wanted it in a hurry. There was another concern he knew, and he would say, Gates is a pleasant acquaintance, but if I give him this order I won't get the stuff on time. So I was up against the general proposition of going out where I was not known in order to get business. (Laughter.)

When I first started, I got out a card, "William D. Gates, Manufacturer of Terra Cotta, Vases, Brick, Wall Copings, Tile, Sewer Pipe, etc.," and then the next day if I found that I had left anything off of that card I would get out a new one. Afterward I found out that if I confined myself to one thing that I could do well, it was enough. Then I confined myself to terra cotta. In our laboratory we got to experimenting with clays and I thought I saw possibilities there. I nursed that idea for two or three years and then we started to making pottery. Anyone who can run a pottery as a business by itself is certainly not only a good business man but is a financier. I think I have referred to it before. It suggests to me that when I went into this business I was a good deal like most other people to discover a clay bank when they are off on a vacation. They lose the distinction between a clay bank and a national bank. They think that the clay bank is something that they can scoop out and cash like a draft on a national bank. There is something in that, because the clay bank needs the

national bank back of it to work it successfully. (Laughter and Applause.)

If you go through one of the large stores like Marshall Field & Co., and just saunter through their pottery department, then you will wonder why there is any need of anybody making more art pottery. And yet, it is an attractive line of business. I think there is nothing more attractive than that little area of lines that comes into the potters' field. Just the slightest curve in a vase makes it a good vase, or a poor one. No matter how much experience he has had, when a man draws that line on paper, he is fooled when he brings it out in the work. Perhaps if I had a fine vase today, a man who looked at it would say, "That was copied from the Romans," or from the Assyrians. It is not a direct copy, because I have not copied it from them. But there is a line running through the human mind. Perhaps I will see a vase today and the impression of it will stay with me and in after years the fact of seeing that vase will have its effect on me.

Then in geometrical curves. There are men who have theories that all these things in the old Roman and Grecian times were worked out on strictly geometrical rules. I had a man show me a short time ago that he could work out the plans of the Parthenon by geometrical propositions; the size and height of each base, of each column, of the old Parthenon. Yet the same man in trying to work out a vase design in the same geometrical method, could not do it. Yet if you drew a vase he would go to work and after an hour or two with his geometrical theories he would show you why you got such a curve, and why it was, but he could not construct it. It can be constructed mathematically, unquestionably, but it has got to be pleasing to the eye and the slightest change in one of those curves will make all the world of difference in the appearance of the vase.

There are any quantity of vases made; there are any quantity of ways of making them. Of course it seems foolish to get up here and give this away to you gentlemen because you will go back to making vases when I tell you all about it. But the times have changed, I think. The time when a man would lock the door and build a high wall around his place, is past. There is no high wall around our place. There are no locked doors. We are always glad to receive visitors and do receive a great many of them. I think one thing that has been a very great comfort to me has been this condition of affairs that has grown up in the last twenty years. When I went into this business there was no literature to be found on the subject. But through these associations that have grown up there has been a meeting of the men at which they found out that they were really a mighty good lot of men. There has been an interchange of opinion that has saved a great deal of money. When we get together in the lobbies, as we do as well as here, we find that one man has tried one plan, another another, and with exchange of the cost of experimenting along that line saves expenditures.

One of the most pleasant things to me has been to watch the growth of the American Ceramic society. Those young fellows, men who understood German, for instance, and could read the works of Seger. They spent the night hours translating him, and did that for two or three or four years in order to make that work accessible to the English speaking world. It is a broad-minded proposition that we all want to be proud of. It is in direct opposition to the old system of absolute secrecy. In England, authenticated history shows that there was no subterfuge that men would not undertake in order to get in and try to steal the secrets of another organization. In one instance a man went to a factory and feigned idiocy. When they kicked him out he came back again. They did this time after time.

Finally they thought that he didn't know anything and could not give anything away, and they let him poke around the factory. He poked around the factory until he finally went off and started a rival organization. He had got the secret of the ware. We have grown up broader minded than that and we realize that we have the best material to work on that there is in the world. And we are making our ware today just as well as we know how, and when we can find any way to improve it, we do improve it. But we have confidence in our ware, so that if there is not a market for the ware, we are going to reach out and make the market for some other ware.

There is such a wide field for the clay worker that there is no limit. It has grown beyond our wildest ideas. Then the steel construction sprung up and ware had to be made, not only to adapt it to the outside view, but it had to be made and adapted to sheath the steel and fit around it. This increased the use of the ware way beyond my wildest dreams. The use of it is increasing to such an extent that we can hardly keep pace with it. I think we are going to make in this country things that we never thought of. I think we are going to come to the time when America will be the leading clay working nation in the world. We have the material and the brains to do it. I forget whether Illinois is now the third or the fourth in rank of the clay working states, according to the government census. And down underneath us we don't know what we have got.

When I started to show a sample of my clay 20 years ago to a man he said it was no good. What position was that for a man to take? Today we know very little, and twenty years ago we knew even less. If we know our business, we say, "we cannot tell you from that sample." We realize that the Almighty has put one clay in one district and another clay in another district, but he has given man the brain power to mix the ingredients, because the Almighty does not put the ingredients together for the man to dig out and work. He leaves something for the man to do. It is for the man to gather up these great products and to handle these products in such a way that they can be used.

Of course when you get into the glazes, there is a wide field. We have tried to run a laboratory. It costs money all the time, but we feel that we are getting results. In our laboratory we find that doing the best that we can do, so many things enter into the action of the day that there are matters that are puzzling me today and have been for many years and I expect will puzzle me until I am through with clay working. As soon as you glaze your work then you have a complication of affairs. In the Teco Ware we happened to get a green. It is a peculiar green that we never have been able to name. It is called the "Teco Green." It is a little different from any other ware. It is not a glaring surface, and it is not a refracting surface.

A good many of the architects object to a glossy surface on a building. You will see some of those skyscrapers in Chicago where, when you get the sunlight on them, they will reflect that light. Part of the building will get just the curve to reflect the light and some more of it won't get that curve on account of the unequal surface. The architects are all the time scheming to get away from that. We have frequent cases of it, but one that I recall particularly is that of Jarvis Hunt on the American Trust building, on the northeast corner of Clark and Monroe. The First National Bank is at the other end of the block. That was constructed, at great expense, out of granite. They paid two or three times as much for it as they would if they had used terra cotta, but they insisted on having granite. Incidentally, when they got to the cornice, they could not make it of granite. Hunt had to put his building up immediately adjoining. He wanted to get a building that would not curse the First National Bank and would not be cursed by the

First National Bank. He gave the subject a great deal of study. He arrived at a conclusion that was very satisfactory. He gave it a rough surface, glazed and speckled with brown and yellow. But taken in the whole he got just the effect that he wanted. With a speckled surface as soon as you get at a distance, you get a result that you cannot get with any one mass of color, or tinted color. That has been one thing that has increased the use of the speckled brick so widely.

On the Rector building he used a paving block, the largest that he could get. Those two buildings standing across the street are absolutely different, and yet they look well together. The American Trust, standing against the First National, has been complimented by everybody who has seen it. Incidentally, on the cornice of that building, a cornice which projects about four feet, they used eagles projecting from the wall, and those eagles at eighteen stories high, were made with a spread of wing of eighteen feet. I have never seen anybody who looked up from the sidewalk and thought that the spread of wings was more than six or eight feet. All these things have got to be taken into consideration by the architect and by the terra cotta man also. The architect is blamed if anything goes wrong, but he in turn throws it on to the terra cotta man.

To get back to the pottery. That has made rapid progress in this country. It comes to a point where you are making a little ware that you are stuck on; you think it is a good thing. Then the question is as to the public. That question was a very serious one with me, as to letting the public know about this ware, and how to let the public know. If the public does not know about the ware, the ware does not do you any more good than you can derive from having it in your own home. Then the subject of advertising comes up. That is a powerful instrument but it costs a lot of money. When I put twenty or twenty-five thousand dollars into advertising, where am I going to get it back. Your money is gone, your advertisements are out and the question is of getting your money back in little dribblets. I have had people come into the office, look at a little vase and at the price marked on the bottom. We have never yet had to carry any of those people out because they fainted, but some of them have been in pretty nearly that condition. "Why," they would say, "there is not clay enough in that to make a snow-ball, and yet you want six or seven dollars for it."

The clay is a crude product. The money that we expend in our ware is in the labor and in the fuel and in the hustling and in the advertising. You would be surprised at the clays that come into our office, sometimes you can hardly tell whether they are sand or clay. Yet men will bring that stuff into the office, and when I tell them that I do not believe it can be used, they get mad. They know that we cannot spend a whole lot of money in making analyses. If a man brings you a sample of clay, work it up in a plastic condition and put it in your kiln and let it take the chances on your heat. Your heat may be destructive to that clay. You cannot try the different heats.

I had a man come in a little while ago with a sample of clay which he put before me. I told him I could not afford to make an analysis of it; that we were trying to feed some babes out at our own place and we did not have the time to work on his sample. He told me a whole lot of things about that clay. I said, "I think your clay will probably make a brick." He laughed at me. He said, of course it will; I can get \$80 a thousand for brick made out of that stuff in Chicago. I said, "you are a lucky man. Have you been around to see these men? There is not a brick selling for \$80 a thousand." Finally I told the man that I must get back to my work, that he knew more than I did about

it. There are a whole lot of those men going around with clay that they think they can put on the cars and sell and soon retire from business.

The more I see of the clay business, the more I realize that clay is a product that is of mighty little commercial value. We have to buy clays from abroad and bring them here, some from Germany. But those clays are very carefully prepared, they are washed clays. If you take off the charge for freightage and for washing, you will find that when those clays get back to the original miner that there is not very much of a margin for him. So I say that the cost comes not from getting the clay but from mixing and handling it. You will find that things have gone wrong, somehow, that the clay is getting different. That the clay will change in some things. We all know that.

It is in the study that the man puts into it, and spends over it. And the machine men and the clay men have got to stand side by side. I have very often seen a clay in one place that would not run commercially, and yet if put with another clay it would do more than the manufacturer ever claimed. One machine is fitted for one purpose and another for another purpose. One will handle one clay and another will a different clay.

I have given you a helter-skelter talk. I said I would try to stop when I told you what I knew, but I think I have told more than that already. Of course, I am a crank on this subject, and I like to talk to men who are working the same material and working to the same end, and that end I believe is, among our craft, to make the best ware that it is possible to make out of our goods, and to make it at the least margin. Though it looks at times as if we were all working for the coal man and the pay roll.

I have not talked about the Teco pottery. If there are any questions that anybody would like to ask me, about how we put the hole into the vase or anything of that kind, I would be glad to answer. The methods of manufacture of Teco pottery I have not dwelt on at all. The material is prepared and poured into a plaster mould. Then the mould is turned upside down, leaving this vacant portion inside of the mould. Then it is allowed to stand until it becomes rather hard and the mould is taken away in pieces and the vase has to be finished by hand.

I thank you, gentlemen. (Applause.)

Mr Loy: I would like to say one word in favor of the Teco ware. It has been my pleasure to visit Brother Gates at his place of business. I was telling Mr. Gates about being in Ohio when we struck oil. Then he wanted to look over his place and see if there wasn't any signs of oil there. The next day I found him under the bridge poking in the water with a long pole trying to see if he could not raise some of that oil. (Laughter.) A year ago I met him at the convention and he said if I would promise never to mention his oil seeking experiences he would send my wife a Teco pottery vase. That pleased me, of course. After we had received it, my wife finally called me to an accounting and asked me if I had thanked Mr. Gates for the lovely vase. Of course I had forgotten to do that. So I wrote, if I can remember, something like this:

Dear Mr. Gates, joy we confess.
The gems are here, paid up express.
To thank you now is our intent
For your fine Teco compliment.

The first we've seen of your new line,
Your Teco pottery is fine.
On vase and mug we stand and gaze
Oh, Lord—no, no, give Gates the praise.

My wife, says she, how can he, pray,
Make such fine vases out of clay?
Does he but use the juggler's wand
And make them all by slight of hand?

No, no, dear wife, no, no, said I;
Knowledge and skill he doth apply.
I know the man, his smiling face
Is far more handsome than the vase.

Then, looking at this face of mine,
My wife, says she, Gates must be fine;
If he can make a vase so true
Why can't he mend that mug for you?

Dear wife, said I, I'll tell you now
He's moved the wrinkles from your brow;
The vase, I say, in two short weeks
Has set new dimples in your cheeks.

While my own face once like a jug
Resembles now his handsome mug;
I'll be a daisy after awhile
When I, like Gates, have learned to smile.

(Laughter and applause.)

Mr. Gates: Mr. Loy apparently did not know the difference between fishing for fish and fishing for oil.

President Stipes: The next on the programme is by Professor Mumford, of the University of Illinois, for a paper on "The Value of Feeding Live Stock on Brick Paved Areas," but owing to his illness Professor Hall of the university will take his place.

Prof. Hall: The subject of feeding live stock might, at first, seem a little bit far fetched in connection with clay working, but I hope to be able to establish some relation between the two before I get through.

VALUE OF FEEDING LIVE STOCK ON BRICK PAVED AREAS.

The application of brick pavement to stock feeding is confined mainly to the fattening of cattle and hogs. In view of the further fact that the only definite available data on the subject deal with those classes of animals this paper will consider the subject only in its relations to the production of beef and pork under conditions comparable with those of Illinois.

The improvement of the surface of feeding yards has received comparatively little attention at the hands of farmers and stockmen generally. Systematic inquiry by the Illinois Experiment Station into conditions in this state based on the statements of over five hundred representative cattle feeders showed that only seven per cent of our correspondents made definite provision against mud, other than that afforded by waste feed trampled under foot. Further, only two per cent besides these seven per cent stated that their lots were so drained as to obviate serious inconvenience from muddy surfaces. That muddy lots do constitute a serious problem in cattle feeding is indicated by the following suggestive replies received from feeders in different parts of the state. "I have no way of preventing mud. Wish I had one." "Can't prevent yards from getting muddy. I advise brick pavement." (This man has fed one hundred cattle per year for ten years.) "Have no way. Wish you would devise some plan." "It is a hard proposition. I do the best I can but that is poor." These facts are certainly significant of the need of, and opportunity for improvement in feed lot surfaces.

The methods of surfacing employed by those cattle feeders who have attempted to provide against mud may be briefly considered. In the investigation just referred to it was found that but two per cent, or ten feeders, of all our correspondents had yards completely covered with paving material. Of these, two were equipped with brick paved lots, two with rock pavement, three had lots laid with railroad ties, one partly with rock and partly with railroad ties, and one with cinders. It is evident from this that the need of solid surfaces in feed yards has been recognized by practical feeders and that efforts are being made to meet the need. Since the time of the above correspondence some four years ago, a number of brick pavements have been laid in Illinois cattle feeding yards. Honorable T. S. Chapman of Jersey County who has used one for more than ten years says, "I think the pavement is the best investment I have on the farm for the money."

The value of pavement in cattle feeding consists of two elements, namely, the saving of feed and the increased selling price due to the cleaner condition of the stock. The Illinois Agricultural Experiment Station has conducted some experiments which furnish data on these points. In one test a carload of choice two-year old steers was fed in a paved lot and another carload of steers was fed in an ordinary mud lot. Those in the mud lot had access at all times to an open shed where the bedding was kept dry at all times. This shed was made large enough for all the steers to lie down at the same time. The feed box in which the corn was fed was only about 15 feet from the shed and the water tank about 20 feet. The experiment extended from December 1st to June 1st so that the mud lot was frozen during a large part of the time; and only during part of the last two months was the mud lot in bad condition. Both lots of steers were fed on the same ration and all other conditions excepting the surfaces of the lots were the same. The gains in weight made by the steers during the six months were practically the same in both lots. During the last two months there was a difference of 5 per cent in gains in favor of the steers on pavement. The pigs following the latter steers, however, made nearly one pound more of pork per bushel of corn fed the steers than did those following the steers in the ordinary mud lot. In other words, while the pork produced by the pigs following the "mud lot steers" paid for only 12.86 per cent of the total feed given the steers the pigs following the "paved lot steers" paid for 16.67 per cent. This would amount to about \$1.50 per steer with pork at present prices of \$6.00 per hundred-weight.

The difference in market value of the cattle at end of this test was ten cents per hundred-weight in favor of the steers fed on pavement. A discrimination of ten to twenty cents per hundred-weight is commonly made in the cattle markets in favor of cattle with clean hides as compared with those having dirty, manury hides. Generally, therefore, \$1.50 per steer would be gained by this item; and, together with the increased pork production, approximately \$3.00 per steer should be credited to the pavement. A pavement designed to accommodate fifteen to twenty cattle cost us a total of \$153.00, so that the economy of the investment is clearly evident in this case. We are not to apply these results to cattle feeding generally since a large proportion of the cattle fattened for market are fed during the summer and fall when surface conditions are much better and when the cattle and hogs are not confined in small yards to such an extent as in the spring months. The foregoing results are believed to indicate what may reasonably be expected under similar conditions during the winter and spring months.

The Illinois Experiment Station is provided with a number of brick paved feed-lots which have been considered almost indispensable in the experimental feeding tests that

have been conducted. These lots have a fall of one inch to six feet away from the open sheds. There is also a side slope to each lot with a tile at the lowest corner to carry off surface rain water that falls on the pavement. As the pavement is frequently cleaned there is no serious leaching of manure.

After the proper grade had been secured the ground was covered with six inches of gravel which was rolled and tramped down solid, covered with one inch of fine sand upon which No. 1 paving brick were laid flat, herring-bone pattern, except in the alley and around the scales, where they were placed on edge. After being put in place the brick were rolled down even and, upon inspection, if any were found to be soft they were replaced with good ones.

The space between the brick was filled with a grout "filler" consisting of one part clean, sharp sand, and one part of Portland cement. The cement and sand were thoroughly mixed dry in tight boxes, then made into a mortar of the consistency of cream and thoroughly broomed into the joints between the brick. This was done to keep water from getting underneath the pavement; which, if allowed to enter, would soften the sub-grade or cause the heaving of the brick, by allowing freezing and thawing.

The cement filler was allowed to set a week before heavy loads were allowed on it, and as the work was done in summer, the sun's rays were kept off by means of a canvas for the first day. A retaining curb of 2x8 plank, braced by a 4x4 placed two and one-half feet in the ground, was put in at the gates to keep the animals from breaking the edge of the brick.

The feeding experiments referred to in this paper are fully reported in Bulletin No. 103 of the Illinois Experiment Station; the plans and specifications of the experiment station cattle feeding plant are given in Bulletin No. 110, and the paved feed lots of several successful Illinois cattle feeders are illustrated and described in Circular No. 98, all of which publications may be had free on application to the director of the station at Urbana or Champaign.

Mr. Blair: In order to avoid the slippery condition that the Professor spoke of, the use of the No. 2 hard brick made by other manufacturers as well as by our company, would remedy that.

Prof. Hall: We have never had a serious difficulty on that score. We have never had an animal injured on our pavements. But a man has to pick his way, especially after the pavement has just been cleaned. The average man would not have any trouble because we would have six or eight inches of manure on the surface.

Mr. Blair: I will say that it is possible in our company that we have never sold No. 1 for feed lots, but we possibly have sold in the neighborhood of twenty-five or thirty feed lot jobs to the farmers of Illinois and Indiana. I believe invariably we have sold what we class as our No. 2 hard brick. That seemed to meet all the requirements.

Prof. Hall: I will add to what I said that the brick pavements are coming into favor more and more in Illinois and I am glad that they are. While we do not advise them generally, we do advise them during feeding in the spring months. A man came in this morning and said that he had just put in a brick pavement and could not understand why he had not done it ten years ago. It rests, I think, with the brick men to develop this field, although perhaps the burden may be on the Experiment Station.

President Stipes: For the benefit of the common brick makers present I will inform you that the experiments were

made on common building brick. We will now hear Mr. Will P. Blair, President of the National Paving Brick Manufacturers' association, on the question of "What Constitutes a First-class Paving Brick."

WHAT CONSTITUTES A FIRST CLASS PAVING BRICK

The first pavement made with brick that I had the pleasure of seeing in process of construction in a roadway was witnessed by me a good many years ago. The brick were dumped from a wagon as you would dump a load of gravel. That does not seem so long ago, but rather yesterday—since upon yesterday, as it were, whole streets have been paved without a pretense of an engineer's services, and are practically dumped into a street, and even now it is not an unusual thing for brick streets to be built without the superintendency of an engineer. The services of an engineer was not thought necessary, and so not thought of at all in building the first brick streets in Illinois. For the same reason, and no better reason, the services of the engineer have been dispensed with time and time again, because it was not thought worth while. His skill and wages for the time seems to be thought of as being out of proportion for the importance of the job. A dollar and one-half to two dollars a day so-called inspector is often deemed sufficient pay, and such a person regarded as being fit for an inspector on streets for the same reasons that the boy could so highly recommend his dog, not being fit for anything else, he knew he was a good coon dog. Just why the public endures being trifled with in this respect is difficult of solution. It is a method that has grown into a practice for the reason that sufficient protest has not been lodged to remedy the evil.

A mile of brick street 36 feet wide costs, with the curbing, \$40,000. It not unfrequently happens that cities and towns from twelve to twenty-five thousand inhabitants build two miles of streets in a single season, and \$80,000.00 is expended practically under the supervision of the two dollar a day man. I ask what would be thought of your citizen neighbor who having determined to build a \$40,000.00 residence, would do so without the aid and services of a most competent architect constantly superintending the job. No one knows better than gentlemen of the engineering profession that more money is wasted upon streets and roadways through incompetent superintendency than that of any public utility for which money is expended, and no one else than you feels more keenly upon the subject than the material man whose product is thus abused. So far as the brick manufacturers are concerned, I think I may say without the least degree of hesitancy that they not only stand willing, but determined so far as lies within their power, that the engineer shall supervise the construction of the work for which he draws the plans and receive the pay for such supervision for which his ability entitles him.

An architect's fee for superintending a \$40,000.00 building would certainly be as much as three and oftentimes is as much as five per cent of its cost. In this day and age of the world, even a modest home is without its complement and necessary appurtenance when it is without a street, at least, in keeping with that home. The beauty, the utility, the comfort and durability from every point of consideration is as important in one case as in the other, and deserves equal care and attention. The interest of the Vitrified Brick Manufacturer in the use of their product is co-equal with that of the engineer or property owner. We earnestly desire the co-operation and help of both, and we are willing at all times in recognition of that fact to help the cause of the engineer with all of the influence at our command. If professional ethics would bid them be modest, our material welfare is ready to supply the necessary obtrusiveness to set aside the practice that contributes to bad work, and

put them where they belong. We only need to be taken into their confidence and quietly directed in the things which we may do, and I plainly confess that we do not wish the relationship to stop there. We desire to take them into our confidence. With the incompetent inspector we have our troubles. We do not know whether he really thinks us dishonest, or whether he does not consider it as a part of his duty to consider us dishonest or which, but do you think that we can take such a man on to our yard, explain our methods of burning; demonstrate where the good and the bad brick come from in the kiln, where our own troubles lie, and of all the efforts that we put forth and as we put them forth to give to the cities the quality of the brick we have promised to furnish. We are not satisfied, however, with eliminating the incompetent inspector. Boards of trustees, city councils often so circumscribe the engineer in a way that he is not the responsible factor he should be; the final judgment and authority of the engineer is not supreme, but reserved by a body that possesses no element of technical learning—a doctor is called and prescribes, but some wiser council (?) determines whether or not the patient shall take the medicine. The authority of the engineer should be made supreme to make him forceful and independent. After an engineer's plans are accepted and approved, then he should be clothed with absolute power and authority to carry them out in detail. Where the engineer is given full control of the plan, specification and details of construction, the material with which it is to be done, we do believe that it would be to the interest to all concerned that the engineer visit the yard and the factory from which the brick are supplied; see the brick as they are made, as they are burned, assorted and shipped, where the overburned come from, and note the characteristics; likewise the underburned, the airchecked, the faulty made at the machine, the spoiled at rapid firing and of all the little details that separate the good from the bad.

As they gather some little information from us along these lines at such conference, we necessarily would learn a great deal from them.

What constitutes a first class paving brick is a question that can not well be answered in a few words. You are all well aware that we are wont to say and do say that a paving brick that will withstand the action of the rattler and not sustain a loss of exceeding twenty-five per cent, and one that will not absorb but from two to five per cent of its own weight is a good paving brick, but when you ascertain the quality of a brick by that process of testing, the brick itself is no longer fit for use. Then the test itself is only practical so far as it may serve by way of comparison to enable intelligent judgment to be passed upon similar brick that are expected to be used. I have before me some half dozen or more samples of first class brick of the various makes that seek a market in your state. I would say that all of these brick are first class, and meet the general requirements, and after placed in the streets of the cities and towns of the state of Illinois, under what we call good construction, it would be a rare exception where they will not withstand the wear and tear of an entire generation. I have before me here also an overburned brick, an underburned brick, a brick that is burned too fast, a brick that is spoiled in the mill, and brick that are otherwise defective, each having been manufactured by the same process; burned in the same kilns; of the same material and apparently received the same treatment as the brick that are good. The comparisons that I have here are each somewhat in the extreme. I believe it was your own immortal Lincoln who said that the way to learn most effectively by illustration and comparisons is by instancing extreme cases, and that is why I have brought these extremes to you. It does not require much stretch of the imagination for you to

realize that there is a point where these two extremes meet, and it is the case with every manufacturer that between the good and bad there is a doubtful line. I think that you will find that it is the method of every first class manufacturer in giving instruction to his men upon whom he must depend to fill his orders that the doubtful line must be eliminated in favor of a good grade. If there is a doubtful line where these two qualities meet with the manufacturer with all his familiarity with the details, conditions and circumstances surrounding the making of the product, what can be expected in the exercise of the judgment of a man such as I have stated while acting as an inspector. This is the aspect that presents itself for your and our intelligent consideration, and this is the condition that led me to say, and is the father of the wish, that the engineers might be taken into our confidence and we into their confidence, and that is why I say to you that a visit to the factory of the manufacturer who supplies the brick that the engineer is expected to use upon any important street, will be to the decided advantage of both. In some cases it is largely the place in the kiln where the different grades come from. Again the quality may be determined somewhat by the color and, as is sometimes the case, by the weight alone, mill insufficiently fed, quantity of clay lacking inside of the brick, the outside appearance perfect in form and perfect in burning. In the latter case the fault of the brick is only detected after it is placed in the street and subjected to the weight of the roller. But no two brick of the entire lot before me are of the same color, nor do any two present the same appearance so far as fracture, density, burning, or anything else as it appears to the eye make the two alike. Each is totally different, and made from slightly different clays. A visit to one yard will not equip one thoroughly in judging the quality of the brick from another yard, so I would say if it is possible, as each factory supplies a street from time to time, visit each factory, inspect the yard from which the particular supply of brick are to come.

I have with me also two or three specimens of first class brick that have been in use. One specimen taken from under the wheel track, having been in use a little more than fifteen years. This specimen of brick is similar in quality to the No. 1's that I have before me, but it was placed in the street under proper construction. I have a corresponding sample precisely alike in quality, but placed in the street carelessly and not in accordance with the plans and specifications we recommend. The wear on the two specimens were as nearly alike as it is possible for conditions to be in two different places on the same street; both were from under the wheel track, but you readily see one is a total wreck, while the other is not perceptibly worn. I have another specimen taken from another street that was in use 12 years, sustaining the traffic under heavy loads daily, and in that entire time many loads that passed over it weighed more than 12 tons. I was unable to procure a mate for this sample—construction under bad conditions—for the reason that on the entire block from which this was taken, no more apparent wear was found anywhere. These brick we furnish in proof of the statement often made, that the older the brick street, in case of proper construction, the better it is for all purposes for which it is built. Bridges collapse, buildings fall, streets fail. There are failures in all engineering problems, but almost without a single exception the failure is due to misconstruction or a misapplication carelessly or otherwise of the plans and specifications made by the engineer. You ask me, why this special plea for competent supervision? I think I have already given you the answer. What constitutes a good paving brick is one that is properly laid in the streets.

In so short a paper I can only indicate these two or three thoughts which lie at the bottom of hindering the complete

vindication of brick streets. But they only hinder and delay. Our faith that brick manufacturers with the aid of the conscientious engineer, will see brick streets preferred to all others has never been shaken for a moment.

Mr. Blair: I have not satisfactorily answered the question that I have been asked to answer here today, "What constitutes a First Class Paving Brick?" It is difficult to answer such a question in so short a paper but I can give one answer that will be satisfactory, or ought to be satisfactory to every person interested in the use of paving brick in the state of Illinois. A first class paving brick is a paving brick that is put into the street and that will stand under proper conditions.

The speaker had before him on the table a number of specimens of brick that had been in use under various conditions; he told where they had been used, how long and under what circumstances. He spoke for some time on this subject, illustrating his remarks by reference to the specimens before him.

Mr. Hammerschmidt: In the city of Wheaton they have been laying sewer and water mains for the last year; I was called in by a friend and I said that that for the paving they ought to have a foundation better than the old mud and gravel. I claim that that is not a good pavement. What do you think about that?

Mr. Blair: I take this position, so far as my personal judgment is concerned. There is so little difference between the construction of a good street and the construction of a bad street that if I could properly and fairly lay down the conditions between the good and the poor construction, you yourself would always choose the good. But it is a fact that many people do not realize the importance of the difference and they look at the idea of saving, which is well enough in some particulars. To get a brick street is the limit to which some towns will go financially. In that case I say take the brick street. It will be a good street for years and years to come.

Mr. Hammerschmidt: I find that the good brick show most wear when there is light traffic, delivery wagons; not where there is twelve and fourteen tons passing over it.

Mr. Blair: My observation has been that the severest thing upon a brick street is the rapid driving, but I will say this with reference to the streets from which these specimens were taken, that the larger portion of the driving over those streets was rapid driving.

Mr. Mamer: There has been a little talk of paving a street in my town and I contended that by taking the street in the condition it is in at present, by giving it the proper grade and rolling it thoroughly and putting on an inch or an inch and a half of sand cushion, putting on one course of brick and thoroughly rolling, that that street would stand perfectly. I would like to ask Mr. Blair if he would so consider it? There is no time that that street would carry a load or more than four tons and very few of those.

Mr. Blair: Possibly Mr. Barr could answer the question better than I can.

Mr. Barr: I don't think there is any question in the world about a town of the size that Mr. Mamer mentions, if the paving is put down at the proper season of the year. If he gets in a good cement filler it certainly will last until

my friend here and his children are dead and gone. I think that is long enough. I have often seen streets paved as I saw a street in the city of Galesburg which was paved on the black mud with only the sand. If the street has not clear drainage to let the rain off or if there are puddles standing on it, the water will work through and you will have a bad pavement. But if it has good drainage so that the water immediately runs off and does not stand, even a sand filler gets practically tight and unless the water does stand in puddles, the paving will last well for years. There are many cases where if you make the expense of the work too great, the people will not stand it, and on a street of that kind where the traffic is limited the brick is so much better than no paving at all that I say put it in.

Mr. Blair: About 5,000 teams a day passed over each one of these streets from which these specimens were taken. The amount of traffic that you would have over the street that you have mentioned would not be as much in 75 years as goes over these streets in ten. So that in a measure helps to answer the question.

Mr. Mamer: The reason I ask the question is simply this. The average person that has not given the question of paving any thought will say that all attempt to make a pavement of that kind is utter folly. They seem to think that the paving will sink in the mud and you cannot get that idea out of their heads. In my opinion I don't see how it is possible for any water to get through to soften that earth underneath.

Mr. Blair: If you get a good cement filler in. Perhaps I ought to say in this connection that the National Association of Paving Brick Manufacturers publish several sets of specifications. One looks to the very best pavement that can possibly be made. Another one to a medium priced pavement, and another one to a pavement that will suit the smaller towns. Anybody who addresses the National Association at Terra Haute, Ind., requesting these specifications will receive them.

President Stipes: Mr. Blair, what foundation would you advise to make a first-class pavement?

Mr. Blair: I think a five or six-inch concrete foundation would be the best.

President Stipes: What preparation would he use, and whether crushed stone and gravel mixed.

Mr. Blair: It is owing to the kind of cement. In the use of Portland cement it would depend on the condition of the broken stone and gravel; I have seen a good foundation constructed with the proportion of eight to one.

Mr. Gillette: What about expansion and contraction?

Mr. Blair: That is easily provided for by an expansion cushion parallel with the curb. I may say that I believe the best illustration along those lines is at Paris, Illinois. There they have ten miles of brick pavement. You won't find a place where the bond is broken by reason of carelessly putting in an expansion joint. There was one place of three or four yards that pinched by reason of the fact that the expansion cushions were not quite large enough so that the brick chipped a little bit and broke the bond where the expansion came. When the engineer discovered that, it was appalling to him. The space certainly was not over three

or four yards square. He said, "I will not have that happen again as long as I have anything to do with the construction of streets in Paris." He said, "Now to get the conditions in streets that I do I am going to make the expansion cushions an inch and a half instead of an inch. I am not going to run any risk." He was a man who in order to be perfectly sure went beyond what was ordinarily called for.

President Stipes: Would you have the expansion joint across the street also?

Mr. Robb: Down at Paris they have some excellent streets. They put expansion joints across the street and along the curb lines. An inch expansion joint. I think that every fifty feet they run one across the street and the full length of the street on the curb and around the corner. So that there is nothing left undone by Paris to get good construction.

Mr. Blackburn, the city engineer is a gentleman of leisure, you might say, but he is a worker and when you start in to put a street in Paris he is there in the morning before everybody, and when everybody has quit he is still there and he watches all the time. All my men know what to do when they ship brick to Paris. What would go in ninety-nine cities out of a hundred is thrown out when it gets to Paris. I don't think that there is anything can be done to make a pavement successful that is not done under that construction. The foundation is Portland cement and stone and gravel. They use two measure of sand and one of stone and one of gravel. That makes it very strong. We have a foundation in our factory that is seven to one. I think that street pavements could possibly be made this way thus reducing the expense of the cement and they would be absolutely acceptable.

I want to speak of another thing that has come to mind. In a city that I was in this winter they were putting a sewer in the street and they took up a street crossing made of No. 2 that was put in ten years ago with a sand filler. It was the most prominent crossing in the city, and I am safe in saying that there was not one thirty-second of an inch wear on that crossing and there was not an imperfect brick taken out and it has been down ten years. It shed water perfectly all that time.

Referring to my friend over here asking for a cheaper construction I would say that there are soils where the cheaper construction could be used and there are soils where it cannot be used. Their engineer ought to be able to answer that.

Professor Talbot: I was very much interested in Mr. Blair's paper and also in the discussion on the subject. I think that the attitude we have taken is correct, that is, in favor of placing good material in the streets. I think it is to the interest of brick manufacturers to put pavements in that will give satisfactory service. I think we all realize that the tests that are made on brick are for the purpose of getting evidence to determine whether the brick should be used. Those tests themselves may not decide that and we must shift the evidence. I think that we all appreciate the lack of inspection, or the inferiority of inspection which is frequently given in the construction of pavements. The point which Mr. Blair brought out emphasizes that every

make of brick really requires a study to determine its good and bad qualities, and the inspector, or the one in charge of the pavement, should know the good and the bad qualities in the brick that he uses. Instead of using a hard and fast rule for every kind of brick, he should know something of the quality, the variations in the brick that he is going to use. And the way to tell that of course, is to visit the yards and see the process of manufacture. It strikes me that the most important phase of this, and the one that will be the most difficult to take up, is to secure proper inspectors of brick pavements. It is difficult to find men who are capable of doing that. A few years ago I made the suggestion that paving brick might well be inspected at the place where they are made, by companies engaged in doing that thing, somewhat the same way as steel is inspected at the mills. To do that, however, would require the training of men who would be competent and experienced in this particular line.

President Stipes: I wish to appoint the committee on nominations and will name the following members: D. C. Haeger, of Dundee; L. H. Martin, of Dwight; Geo. J. Walter, of Chatsworth.

CAN FIRST-CLASS PAVING BRICK BE MADE FROM ANY KIND OF CLAY

Prof. Purdy: I would like the consideration of the association on the question that I propounded to you: "Can a first-class paving brick be made from any clay?" As introductory to this discussion I would like to state the conditions under which replies should be made.

(1) Concerning the possibility of manufacturing a technically perfect brick from any clay. That is, the particular clay in any locality, of any description, and by proper admixture make a paving brick that would be first-class according to Mr. Blair's specification.

(2) Would such a procedure be a commercial success? Would it be possible commercially to so admix materials with any clay and make a good paving brick?

Those two phases of the discussion are distinct. One is a technical question wholly and the other is commercial. It is more the technical question that we wish to have discussed. The clay that after being burnt will bloat, no matter how you burn it, could that clay be mixed with sand or any other material and make a good paving brick? Can any shale be so treated on a technical basis that in the end we will have a good pavement? We go on the assumption of course, that paving brick can be made from any clay. That is, you can make it from glacial clay, or alluvial clay, and we recognize the fact that the chance for commercial success has more advantage in the shale and fire clay, and the prospects for commercial success on glacial clay and alluvial clay is very small. Those considerations are recognized. It is the technical question that we wish to have your opinion on.

Mr. Barr: I think certainly that it would have to be a very poor clay that could not be used, if you get 99% of good clay to put with it. But, generally speaking, I think there are a great many clays that would not make a good paving brick.

Mr. Gates: I am reminded of an incident a good many years ago, of a man who brought into Chicago some very handsome vitrified brick and there was a company formed with great display to manufacture them. I ran up against a good many of those men and one of them got particularly

arrogant one day and said he was going to revolutionize the business. When I mildly remarked that I supposed that he understood what he was talking about, he replied, "there is the brick." I said, "does it occur to you that if I go into my factory to make a sample brick, I will probably do it, although it may take months and money to do it. That brick you have shows that it can be made. But the commercial success depends upon whether it can be made in large quantities at small cost."

I suppose, as Mr. Barr says, if there is 99% of good clay mixed with the other that brick can be made. I suppose that a good paving brick could be made out of very many clays, that would not be commercially successful. I notice that Mr. Purdy separates those questions. I have seen clays that would make a good paving brick but would not stand to a point where you could make them commercially successful.

Mr. Robb: We often find out at the end of the year that we have made paving brick but have not made them commercially. Mr. Purdy puts those two propositions entirely apart. I agree with Mr. Barr that there are no clays that could not make paving brick, but there are clays where you could not make them commercially successful at the present prices.

Prof. Purdy: Mr. Stipes has had some experience in this line as I know, because I have discussed this subject with him before.

President Stipes: I think that is the reason why Mr. Purdy is asking these questions. We have here in the city of Champaign and Urbana probably about five miles of brick paved streets that are built from common building brick. That is, it is a surface clay. The brick that are put in the pavements, of course, are the hard brick. They are burnt in the common up-draft kiln. Some of those bricks have been in the streets now for fourteen years and show very little wear. Yet at the same time you would not handle a thousand of them, in the best way that you could handle them, unless you broke at least one out of every twenty. They break in putting them down. But when they are down in the street they seem to wear exceedingly well. I do not know how many miles of sidewalks we have or how many crossings. I heard Mr. Robb make the remark that he took up a crossing with only cinders under it. We have hundreds here that have been down fifteen to eighteen years; they were laid down in the mud, and you know what we have here of that kind. When they put the first one down I had an idea that after the first big rain we would be looking for it. Those brick crossings are built out of arch brick. That has been our experience here. Now when we were burning those brick for paving brick, I presumed that we would not utilize, I would say, 70% of that kind of brick; that is, brick that would do to go into the streets. We have only two-course work. For the course underneath we would take brick that wasn't quite so good and select the better brick for the top, and also for 30 or 40% of the brick that are left they could be used for building. That has been my experience here, and I think we have a very poor clay here. It is clay that is very difficult to dry and burn. It takes from twelve to fourteen days to burn it. A great many of you gentlemen think that is a long time, but that is the time it takes.

Prof. Purdy: President Stipes, you have demonstrated the fact, as we all know, that the paving brick can be made of glacial clay, but whether it can be made of common clay is not the subject that I wish to have before the house, but the question of whether you can go to any part of your clay bank and get clay that can be used for paving brick. Could you take the clay right next to your factory and

make a good paving brick?

President Stipes: No, we have not been able to make even a builder out of it.

Prof. Purdy: No, but can you take any of your glacial clay and make a paving brick?

President Stipes: We have not been able to say that we could do that yet. I wish we could.

Prof. Purdy: That is the proposition. If there was any way that you could mix other clay with your clay, you could make a good brick. But it is doubtful whether you could so mix your clay right next to your factory with any other clay and make a good paver. You say No.

President Stipes: I say no, that up to this time we have never been able to find anything that was good. Even to a builder.

Mr. Barr: You are speaking of the brick at Bloomington and a number of other places that were used for pavers. And they did seem good. Yet I don't believe that anybody today would consider that they came under the head of a first-class paver.

Mr. Robb: Don't you believe that from any clay bank you can take out a cubic yard and make some paver?

Prof. Purdy: The most popular material is shale. In Ohio, however, paving brick plants are using fire clay for paving brick; it does not follow that all fire clay can be used for paving. Because some plants are using glacial clay, it does not follow that all glacial clay can be used for paving. There is in a clay some property, perhaps it is chemical, perhaps it is physical, that it must have before it can be used as a paving brick material. In fact, it may be said that it must have a certain combination of properties before it can be used as a builder even. It is not a question of its geological age, or its distribution, whether it is in the Ohio Valley or on the mountain top; it is whether it contains these properties. If it does not contain these properties, we have learned that it is very seldom that those properties can be added to it by admixtures.

Mr. Blair: I suppose, Mr. Chairman, that the technical question that the professor refers to is a question that can hardly be answered at all with our limited knowledge. I have experimented with various kinds of clays and I have found clay that when put in the fire and subjected to heat, there would not be anything left of it at all. I have found various kinds of clays that in handling them and working with them they produced all kinds of results. I never saw very many kinds of clay that would make paving brick at all. There is scarcely any paving brick manufacturer in this country who does not have to separate more or less the material in his clay bank in order to make paving brick. I have talked with men who have studied the Chinese wall. The conclusion reached was that the brick in that wall were made of clays found along the line of the wall. They did not make the brick in one place or in a few places, but they made the brick out of the clay as they found it in various places along the wall. That is the brick came from almost as many places as there are miles in that wall. I am told that the condition of that wall is such that there are many vitrified brick in it. There are sections in the wall that show as good brick today as we make for paving. Such sections of that wall are in as good condition as though they were put up yesterday. Other places have almost rotted down. We find very much the same things around us. There are brick made from one end of this land to the other, of all kinds and qualities. Some good, and some we recognize as the very best. But we know that there are to be found clays that you cannot make a brick out of at all.

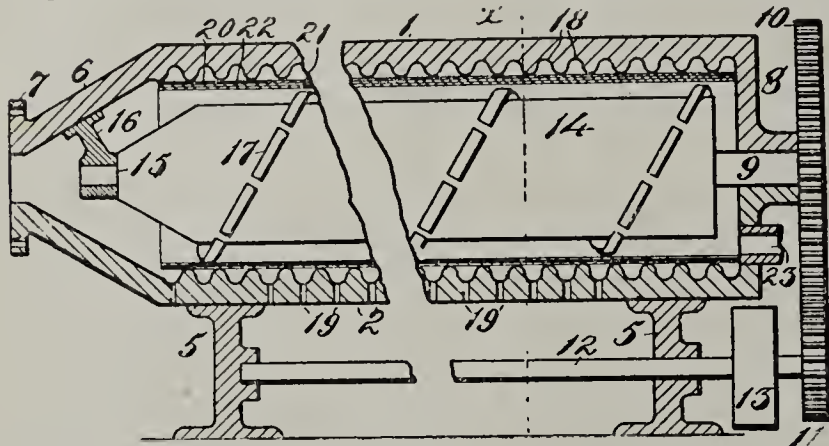
An adjournment was taken to 2 o'clock P. M.

NEW INVENTIONS THAT ARE OF INTEREST TO THE CLAY MANUFACTURER

These new inventions are those that are especially of interest to anyone engaged in the line of building materials and their manufacture, or machinery to make them:

840,107. Clay-Mill. Thomas R. Brittain, Akron, Ohio. Filed Apr. 25, 1906. Serial No. 313,615.

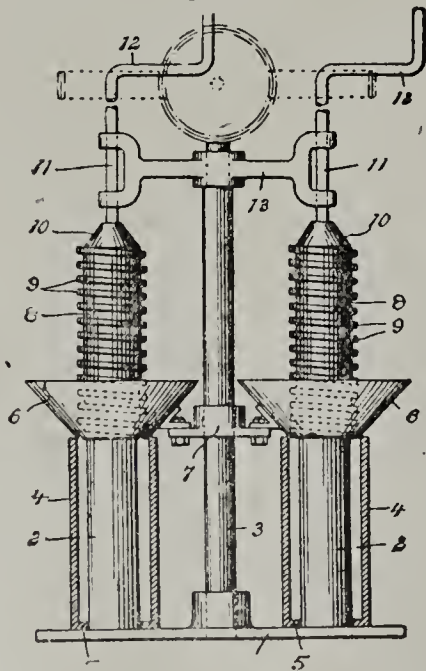
Claim—The combination in a device of the class described, of a cylinder provided at one end with a contracted opening, a mandrel mounted in said cylinder provided with spirally-arranged members projecting therefrom, the interior of said cylinder being provided with a plurality of circumferential grooves having outlets and a layer of filtering material adapted to form a lining for said cylinder,



means for retaining said lining in position and means for introducing to the interior of the cylinder a suitable matter in solution.

A device of the class described, comprising in combination an elongated divided cylinder provided with a contracted opening at one end and further provided with interiorly-arranged circumferential grooves having outlets extending therefrom through the wall of said cylinder, a foraminous or reticulated lining for said cylinder adapted to be retained in position by being clamped between the contracting edges of the parts of said cylinder, a mandrel mounted for rotation in said cylinder, means for rotating said cylinder, and means carried by said mandrel for forcing material placed in said cylinder through the contracted opening in the end thereof and expressing the aqueous moisture through said lining.

830,635. Tile-Machine. Luke R. Peck, Caro, Mich., assignor of one-half to Charles O. Thomas, Caro, Mich. Filed June 6, 1906. Serial No. 320,402.

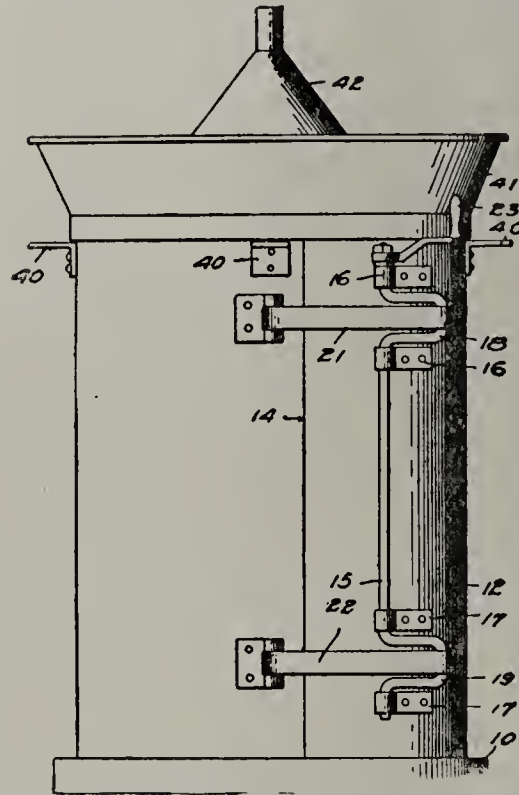


Claim—The combination with a cylindrical mold-shell and a core within said shell with a space between, of a hollow cylindrical feed member of a length equal to that of the mold to fit over the core and fill the space and having a spiral groove extending throughout its length, and means for turning said member.

The combination with a base, of a mold on said base consisting of a vertical cylindrical core secured to the base and a removable mold-shell surrounding said core with a space between, a vertically-extending supporting-shaft on the base, revoluble brackets on said shaft, a hopper having an opening in its bottom equal to the internal diameter of the shell and supported adjacent to the upper end of said shell by one of said brackets, a feed member of a diameter to fit within the opening in the bottom of the hopper and within the space between the core and shell and provided with a spiral feed-groove of a length equal to or greater than the length of the mold, a vertically-extending shaft on the upper end of said feed member engaging bearings on one of the said brackets and free to move longitudinally in said bearings to raise the feed member out of the mold with its lower end within the opening in the hopper and to turn with the hopper from over the mold, and means for turning the shaft of the feed member.

12,586. Cement-Pipe Mold. Levi Shell, Sibley, Iowa. Filed Apr. 27, 1906. Serial No. 314,099. Original No. 778,907, dated Jan. 3, 1905.

Claim—In a mold for manufacturing cement pipe, a split outer shell having overlapping terminals, means for expanding and contracting said shell, an inner shell spaced from the outer shell and also provided with overlapping terminals,

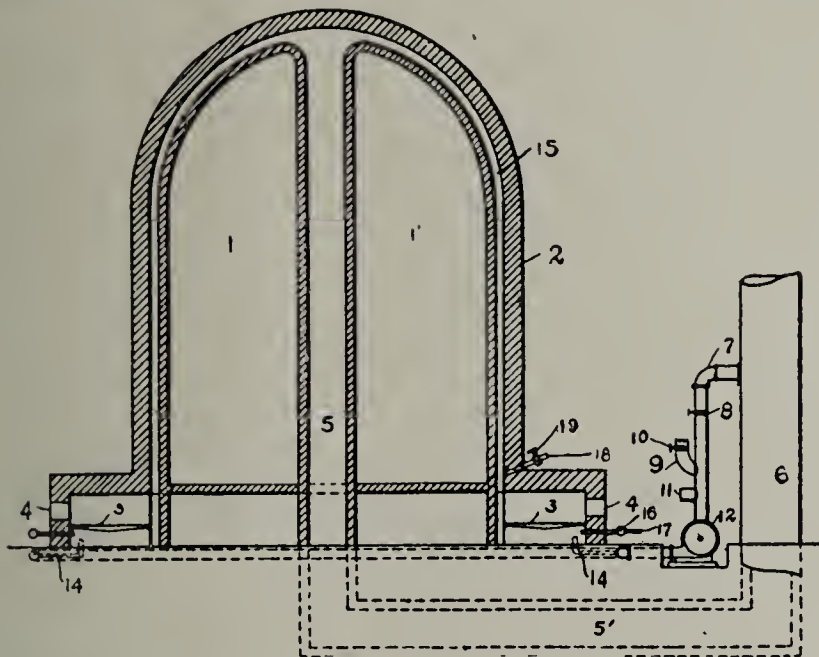


brackets rigidly secured to the interior walls of the inner shell, studs carried by the brackets, rods forming a pivotal connection between said studs and the inner lapping end of the inner shell, jointed bars connecting the inner lapping and outer lapping portions of said inner shell, and means for moving said bars laterally to thereby cause the expansion and contraction of the inner shell.

In a mold for manufacturing cement pipe, a base provided with an annular stop-rib, a split outer shell seated on the base and having overlapping terminals, an inner shell spaced from the outer shell and also provided with overlapping terminals, brackets rigidly secured to the interior walls of the inner shell, studs carried by the brackets, rods forming a pivotal connection between said studs and the inner lapping end of the inner shell, jointed bars connecting the inner lapping and outer lapping portions of said inner shell, means for moving said bars laterally to thereby cause the expansion and contraction of said inner shell, a crank-shaft mounted for rotation on one terminal of the outer shell, a pivotal connection between said crank-shaft and the opposite terminal of the outer shell, and means for rotating said shaft to draw the outer shell into engagement with the stop-rib of said base.

840,559. Process of Firing Porcelain. Carleton Ellis, White Plains, N. Y. Filed Jan. 4, 1906. Serial No. 294,513.

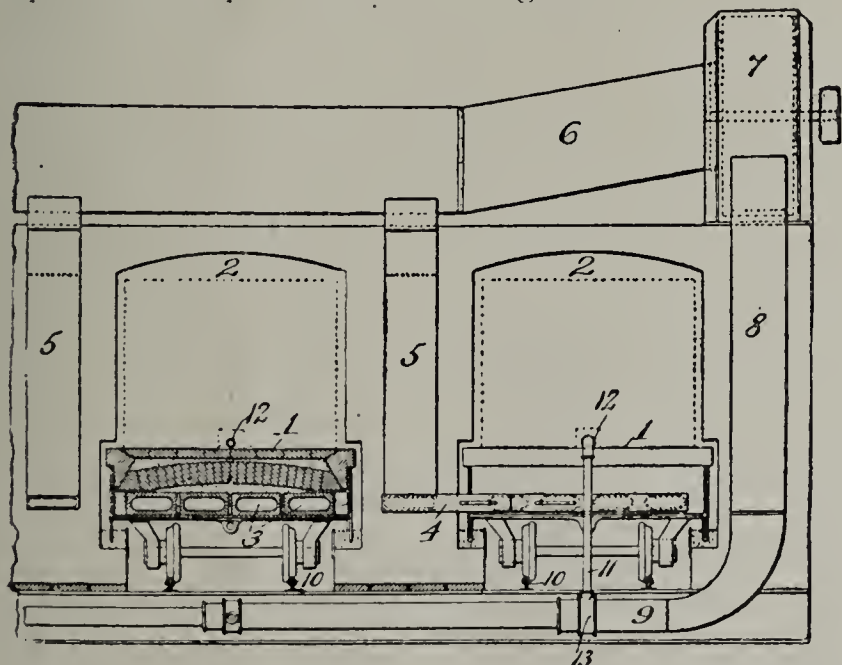
Claim—The process of firing ceramic ware which consists in placing such ware within a suitable inclosing chamber and applying heat by circulating around such chamber a body of burning gases free from unoxidized carbon, the combustion in such gas body occurring in substantially the entire portion of such body which is in the vicinity of such chamber.



The process of firing ceramic ware which consists in placing such ware within a space separated from a combustion-space by a porous heat-radiating wall, and circulating through such combustion-space a body of burning gases free from unoxidized carbon and comprising a mixture of combustible gas, oxygen, and combustion-retarding gas, combustion in such gas body occurring in substantially the entire portion of such body which is in said combustion-space in the vicinity of the ware being burned.

839,832. Manufacturing Bricks, &c. Albert A. Gery, Reading, Pa. Filed Jan. 24, 1905. Serial No. 242,500.

Claim—The improvement in continuously drying, burning and cooling brick and the like in a single tunnel-kiln which consists in producing a current of air beneath the brick-supporting floor-surface from the exit end thereto to the entrance end, and utilizing said current to successively abstract heat from the outgoing floor-sections and to indirectly and directly heat the incoming brick.

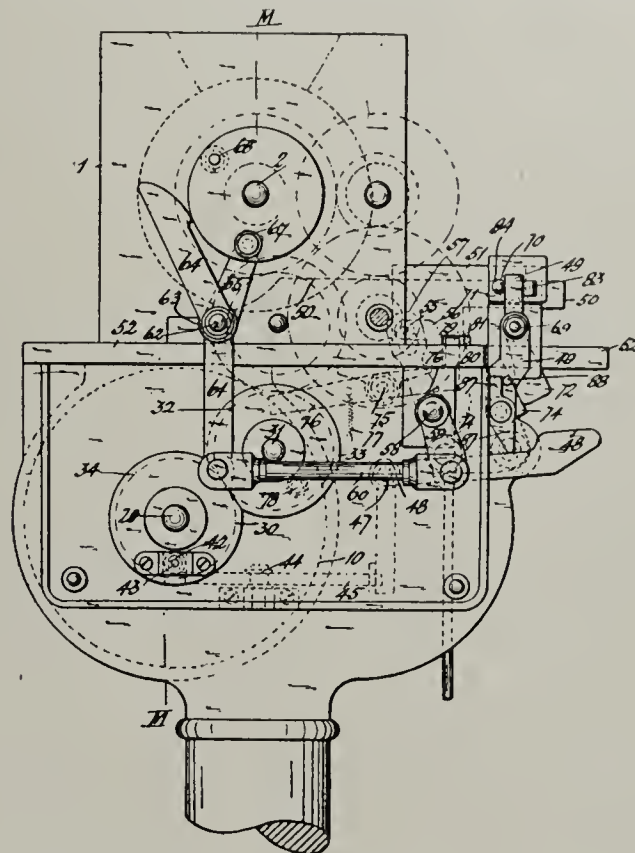


The combination with a tunnel-kiln and a movable brick carrying floor therefor made up of hollow sections forming a continuous longitudinal subsurface air-passage of means for creating an air-current through said passage in reverse direction to the floor movement, and means for delivering said air into the entrance portion of the tunnel comprising

a delivery-conduit extending into the tunnel and a movable connection between said delivery-conduit and a fixed conduit, substantially as set forth.

839,941. Machine for Molding Plastic Materials. Alfred Lutze, Halle-on-the-Saale, Germany. Filed Jan. 13, 1906. Serial No. 205,939.

Claim—In a machine for molding plastic materials the combination of a feed-chamber having a discharge-aperture, means for compressing the material in said chamber and forcing same toward the discharge-aperture, a mold in communication with said discharge-aperture, a rotatable drum carrying said mold and having an outlet, a reciprocating plunger in the molds forming the bottom thereof, a recipro-



catable block controlled by a weight and extending into the feed-chamber, mechanism for periodically rotating the drum mechanisms for reciprocating the plunger, means in connection with the block aforesaid for putting said plunger-reciprocating mechanism into and out of action and means for locking said block at intervals substantially as described.

THE HART COUNTERS FOR CLAY MANUFACTURERS

A very valuable auxiliary to the brick and tile manufacturers has of late been adopted by some of the best up-to-date brick makers in the country. A device known as a register or counter which can be attached to the machine and a record easily made of all the brick or tile made during the day. Where these counters are used it becomes an incentive for one workman to produce as many as his comrade.

These counters are now being adopted on stamping, sewing and stitching counters so the manufacturer can easily see what a person can produce and wages by incompetent help easily regulated, for one employe will see that he must make an average run before he can expect to be advanced in wages. Many other valuable ideas are developed by the use of these little machines. We think the first one ever offered to the brick and tile trade was by R. A. Hart of Battle Creek, Mich.

CLAY RECORD.

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FEBRUARY 14, 1907.

No. 3

"I like to read American advertisements. They are in
themselves literature, and I can gauge the prosperity of the
country by their very appearance."—William E. Gladstone.

When times are dull and people are not advertising is the
very time that advertising should be the heaviest. Ninety-nine
out of every hundred merchants advertise most when there is
least need of it, instead of looking upon advertising as the pan-
acea for their business ills.—John Wanamaker.

CONVENTIONS

The Seventh annual convention of the Wisconsin Clay
Workers' association will be held at Madison February 27,
28 and March 1, 1907.

Any fool can catch on but it takes a wise man to let go.

Some rules are so poor that they will not work either
way.

Before casting the bread upon the waters some people
tie a string to it.

A just man can run up his own business without running
his neighbor's business down.

It's easy to convince the world that you have sense if you
have an unusually large number of dollars.

And when a man bumps up against hard luck he always
blames some other fellow for shoving him.

Subscribe now for the CLAY RECORD and get the only semi-
monthly clay journal that is printed in America. You can
get the news before it is two or even three months old. Who
wants to read what your neighbor did last fall or before
Christmas. Be up-to-date. It will cost you only one dol-
lar to read this kind of a journal for one year.

In the keen competition now noticeable among various
paving materials, vitrified brick has a number of ardent ad-
mirers. It is being installed in many places where it is
giving excellent satisfaction, and some attention has been
attracted to it from sources outside of this country.

Vitrified brick, to be successful for paving purposes,
should be reasonably perfect in shape, free from warping,
so as to fit closely together and make a smooth pavement;
they should be hard to resist the crushing action of the
wheels of vehicles, and tough to resist the action of traffic,
and should be homogeneous in texture and uniform in shape
so as to insure an even wearing surface.

But important as are these essential features of the vitri-
fied brick itself, equally important is the proper method of
laying them to insure the best results. The first essential
point in this respect is evenness, and to obtain this it is
necessary to begin at the very foundation and work upward.
To prepare the foundation properly, the earth should be
excavated to within two inches of the subgrade, which
should then be rolled to an even grade by a roller of between
five and eight tons weight. When it is necessary to apply
earth in embankment it should be put on in layers of eight-
inch thickness and each layer thoroughly rolled, but in
either case a uniform density must be preserved.

Should the subsoil be of clay, tiled drains should be laid
to carry off the water. After rolling, the subgrade should
be laid off in five-foot squares with a stake at each corner
to mark the top surface of the concrete. The concrete,
composed of crushed stone, clean sharp sand, and Port-
land cement, thoroughly mixed, is then applied and stamped
until free mortar appears on the surface. After a reason-
able time, about 36 hours, is allowed for hardening, sand
two inches thick should be uniformly spread over the con-
crete surface to form a cushion for the brick.

The brick is then laid in straight lines across the road-
way, and should then be rolled with a five-ton steam roller
until they are thoroughly imbedded and present a smooth,
even and uniform surface. A filler compound of equal
parts of clean sharp sand and Portland cement mixed to a
consistency of cream should then be applied with steel
brooms into the joints of the brick until the surface is
brought to a perfect level, after which a coating of sand is
put on and the pavement kept free from traffic for about 10
days.

WISCONSIN BRICKMAKERS GET A BETTER FREIGHT RATE ON BRICK

Manitowoc, Wis.—Railroads of the state offer reduction
in freight rates in Wisconsin and to increase rates out of
Chicago on brick, in a new schedule that has been submitted
to G. W. Kennedy, this city, as chairman of a grievance
committee, named by the Wisconsin Claymakers' associa-
tion.

A reduction of 40 cents per 1,000 in Wisconsin and an
advance of from 40 cents to 60 cents per 1,000 from Chica-
go is provided. There is no certainty that the schedule will
be accepted.

OBITUARY

Captain W. P. Anderson, one of Bibb county's (Ga.) oldest and highly respected citizens, died of pneumonia at his home in Macon. He was born in 1835 and operated a brick business for the last 25 years.

David Dibert, for ten years the manager of the Diebert Brick Works at Pittsburg, Pa., died at his home 5628 Margarette St. He was 30 years old, and is survived by his widow, four sisters and three brothers.

B. F. Smith, who has conducted a brickyard at Anamosa, Iowa, since 1869, died at his home. He was born in New Hampshire in 1830, and has been gradually failing for over a year.

BRICK COST \$12.50 IN GOLDEN GATE CITY

The price of brick at San Francisco, Calif., has been raised to \$12.50 per thousand and from \$10, the price which has ruled for a long time past. The brick industry of San Francisco is in the hands of four concerns, two of which are located in that city.

**EDWARD C. STOVER BRIEFLY REVIEWS
BOOK JUST PUBLISHED BY
HEINRICH RIES, PH. D.**

Those interested in any branch of the clay industries, from owners of clay properties, miners and shippers of clays, to the manufacturer of ceramic product in any form, in fact, any worker in or user of clay, will be glad to learn that there has just appeared another valuable addition to the literature on this interesting subject. It is "Clays," their occurrence, properties and uses, with special reference to those of the United States; by Heinrich Ries, Ph. D., assistant professor of economic geology in Cornell university, Fellow of the Geological Society of America, Member of the American Ceramic Society, Member of the American Institute of Mining Engineers, author of Economic Geology of the United States, 8 vo, xxi plus 490 pages, sixty-five figures, forty-four plates, published by John Wiley & Sons, New York.

This book fills a long-felt want by putting in one volume for easy and quick reference much valuable data heretofore only available by a diligent search of many volumes. To this has been added much new and valuable information on the subject treated.

The chapters on origin of clays, chemical properties of clays, physical properties of clays and kinds of clays are all new, and written and illustrated in Dr. Ries's very best style. To those interested this should appeal, as Dr. Ries's reputation has long since been earned by the high class of work he has produced along this and kindred lines in the past.

His illustrations and descriptions of new machinery, methods of handling, etc., will be found very interesting and instructive.

The classification of clays by States, with every detail, will answer many queries.

The volume is handsomely printed on fine paper, bound in cloth, and can be supplied by the CLAY RECORD at \$5 net.

FIRE! FIRE! FIRE!

The plant of the Banner Clay Works at Edwardsville, Ill., was completely destroyed by fire. Dr. Jules Baron, coroner at St. Louis, Mo., is the president of the company. The loss is estimated at \$100,000. Plant will be rebuilt at once.

The plant of the Imperial Porcelain Works at Trenton, N. J., was completely destroyed by fire causing a loss of \$100,000.

Fire in the clay chute at the Card & Prosser Coal & Clay Works, Lisbon, Ohio, caused loss to several thousand dollars.

Fire destroyed the roof of the building at the brick yard of Henry Bender, at West Seneca, N. Y. The office of the company is 40 Jones St., Buffalo, N. Y.

A fire entailing a loss of over \$60,000 swept Manown (Pa.) Manufacturing Co.'s brick plant, destroying all the buildings. No insurance.

ACCIDENTS, DAMAGES AND LOSSES

The attorneys for the Bank of Pittsburg (Pa.) have asked for a temporary receiver for the Reese-Hammond Fire Brick Co., of Bolivar, Pa.

Philip Garvey, an employe of the Manitowoc (Wis.) Clay Product Co., died without gaining consciousness as a result of an injury to his skull caused by a fall.

Harvey Conrad sued the Keller Brick Co., Akron, O., for \$20,000 damages for the loss of a leg, and this week the jury granted him damages to the amount of \$1,500.

William Glimpse, owner of a brick yard at Deer Creek, Ill., is suing John S. Stumbaugh for \$10,000 damages on account of complications which have arisen regarding a partnership.

George Neff, an employe of the Springfield (Ill.) Paving Brick Co., was seriously injured by being caught in a rope attached to the machinery, and thrown into the air and fractured his skull.

E. T. Martin, secretary of the Jefferson Brick Co., Birmingham, Ala., was recently found \$15,706 short in his accounts. He is said to have admitted same and stated that it was lost in gambling.

Lewis Ungemach, an employe of the Ransbottom Pottery at Roseville, Ohio, was seriously burned. While inside of one of the boilers with a torch he accidentally turned on the gas valve which they were removing.

The McNeil Pressed Brick Co., St. Louis, Mo., has secured a judgment against the Standard Life and Accident Insurance Co., Detroit, Mich., for failure to protect and to make their indemnity contract good.

The grand jury at Rome, Ga., has indicted R. F. Hemphill, president of the Atlanta (Ga.) Fireproofing Co., for making a false statement in order to receive his money on a contract. A warrant has been issued for his arrest.

The judge of the court at Sioux City, Ia., took the case from the jury and decided that Nancy L. Vaughn should receive no damages for the death of her husband. No evidence was given showing his death was the fault of the company.

BANNER CLAY WORKS AT EDWARDSVILLE BURNED

The plant of the Banner clay works, located south of the city limits of Edwardsville, Ill., and owned by St. Louis men, was practically destroyed by fire. The cause of the conflagration is not known, but it is supposed that gas emanating from the kilns came in contact with a burning torch, causing an explosion. The fire protection of the plant was inadequate to handle the blaze, and it spread rapidly, communicating with adjoining buildings, which were all connected. The Edwardsville fire company responded to the alarm, but on account of no hydrants in the vicinity, was unable to render any assistance.

The boiler room, engine room, machine department and press building were totally destroyed, the drying department and kilns being saved only by tearing down the connections between them and the other departments. The principal loss is in machinery. The loss to the company can not be definitely ascertained until a thorough investigation is made, but it is estimated at \$100,000. Dr. Jules Baron, coroner of St. Louis is president of the company. The following American machinery is in use in this plant:

One special giant brick machine, one No. 20 automatic brick cutter, one No. 29 pug mill 16 feet long, two dry pans, two eagle double mould repress, one waste heat dryer and cars. These machines were built in the shops of The American Clay Machinery Company, Bucyrus, Ohio.

The capital stock of the concern was \$150,000. The following stockholders, with the exception of O. T. Dunlap, are residents of St. Louis: J. A. Hartman, William C. Loffler, J. C. Fink, Jules Baron, D. F. Hockdoefer, C. W. Meyer, Mrs. F. Zoellner, P. S. Hentel, E. J. Kropp, Mrs. A. E. Kropp, Charles Granber, J. Schallut, F. W. Clemens, C. V. Coelln, M. Bozard, H. Lowenstein, G. Wackerlin, Wm. Loeffler and F. L. Lath.

Some men spend more time trying to avenge their fancied wrongs than they do in trying to keep within their rights.

RHODE ISLAND PROMOTERS AGAIN ATTEMPTING TO FORM A SOUTHERN NEW ENGLAND COMBINE

New Britain, Conn.—Negotiations designed to induce the local brick-manufacturing concerns to join a proposed brick merger have been renewed this week. The Rhode Island promoters, who are trying to organize a combine to include the principal establishments in southern New England have been interviewing New Britain manufacturers. They attempted about a year ago to form a trust, but the local manufacturers rejected the proposition. The present terms which the promoters offer are, in the main, similar to those formerly offered.

The proposal has been taken under consideration by the Central Brick Exchange, which includes in its membership most of the larger plants in this locality. It is understood that several of the manufacturers are inclined to favor the plan and they are disposed to favor the terms with some modifications. Enough encouragement has been received by the promoters so that negotiations will be continued, and there is some likelihood that the proposed merger will be effected within a few months. The plants in the Central exchange have an annual output of about 75,000,000 brick.

THE IDEAL COMPANY HAVE ONLY VALID PATENT COVERING FACE-DOWN CONCRETE BLOCK MACHINERY

A recent court decision at London, Ont., rendered in favor of the Ideal Concrete Machinery Company of South Bend, Ind., leaves this concern in practical control of the manufacture and sale of face down, horizontal core concrete block machinery.

The patent, the validity of which is now so firmly established, was acquired from the original inventors, Messrs. Borst and Croscop, by the Ideal Concrete Machinery Company, and thoroughly covers the process of manufacture of face-down concrete building blocks.

Early last spring, Mr. Henry Pocock, of London, Ontario, opened negotiations for the purchase of rights of manufacture of the Ideal machine under the Canadian patent. After a visit to the Ideal Company's factory at South Bend, and an examination of the Ideal machine and the method of its manufacture, negotiations were suddenly broken off. Mr. Pocock returned to Canada, and after constructing a machine similar to the Ideal, sought to patent it. In August last he began offering this machine for sale. The Ideal Concrete Machinery Company learned of this, and immediately sought an injunction of court, restraining Mr. Pocock from making, selling or dealing in the machine, alleging that it was a wholesale appropriation of their invention with some changes and complicating additions. The decision just rendered is the result.

After a trial lasting nearly three days, in which expert evidence was introduced from Toronto, Detroit, Fort Wayne, Audubon, Ind., and London, Ont., the court gave a clear and exhaustive summing up of the contentions of the parties in which it was declared that the plaintiff's patent was a good and valid one, thoroughly protecting the invention sought to be covered by it. It was held that the machine sold by Pocock was an infringement on the rights of the plaintiff, and the defendant was enjoined from ever again, at any time, making, selling or in any way dealing with the machine in question. Plaintiff was given costs of action, and all orders for the infringing machine taken since the interim injunction was granted in September.

The Ideal Company is arranging to enlarge their plant at South Bend, Ind., for the manufacture of the Ideal Machine, and is opening a large plant at London, Ontario, for the manufacture of Ideal Machines for the Canadian trade.

BONDHOLDERS CONVERT THEIR HOLDINGS INTO PREFERRED STOCK

The bondholders of the United States Brick Company, Reading, Pa., determined to convert the bonds of the company into preferred stock, thus relieving the company of fixed charges and at the same time enhancing the value of the bondholders' investment by securing a participation in the general operation of the company. A bondholder said: "This action was based upon somewhat similar considerations to those which led to a conversion of bonds of the United States Steel Corporation into preferred stock several years ago, which action proved beneficial to both parties. An industrial corporation without a bonded debt is so well fixed in its business and so independent in its action and free from the perils of changing conditions in trade that all parties interested in it are better off. Bondholders as well as stockholders are dependent upon the prosperity of the business and that prosperity is best assured by being free from fixed charges and by enabling the company to distribute its earnings according to good business rules and not upon the demand for payments at stated times without regard to business conditions."

PRUSSING LET OUT OF THE ILLINOIS BRICK COMPANY

George C. Prussing is no longer president of the Illinois Brick company, which, under his direction, was so mis-managed last year that the surplus showed a deficit of \$26,011 in a season of prosperity and the earnings were only 3½ per cent on the \$4,000,000 capital, on which a dividend of 4 per cent. was paid. Necessarily the dividend rate was reduced from a 6 to a 4 per cent. basis.

At the annual election George C. Prussing retired as president and C. D. B. Howell, one of the practical brickmakers of the directory, was chosen in his place. A. J. Weckler retired as vice-president and C. B. Ver Nooy, the auditor, was placed in the position. J. H. Gray succeeds Mr. Howell as treasurer. William Schlake was re-elected secretary. Messrs. Lamson, Potter and Gray, the retiring directors, were re-elected.

A comparison of the earnings tells the reasons for Mr. Prussing's dismissal:

	1906.	1905.	1904.	1903.
Net profits	\$113,989	\$505,291	\$314,000	\$168,336
Dividends	140,000	248,434	205,294	
Surplus	230,845	256,857	108,707	168,236

The balance sheet exhibits a loss of \$26,011 in the surplus as a result of the price-cutting war inaugurated by former President Prussing in an effort to stamp out competition. During the past year brick prices were reduced as low as \$3.50 a thousand for product which cost \$2.90 to make, which resulted in the brick trust losing 50 cents a thousand on every transaction, while their competitors did not lower their prices below \$5, compared with \$8, the figure at which the trust had previously held its output prior to the appearance of competition.

The balance sheet compares with last year as follows:

ASSETS.		Dec. 31, '06.	Dec. 31, '05.
Real estate		\$1,069,109	\$1,078,209
Plants		2,550,607	2,557,307
Bills receivable		393,021	370,808
Materials		291,945	377,814
Cash		93,806	46,788
Total		\$4,398,488	\$4,430,896
LIABILITIES.			
Stock		\$4,000,000	\$4,000,000
Payable		127,642	114,039
Dividends		40,000	60,000
Surplus		230,846	256,857
Total		\$4,398,488	\$4,430,896

In explaining the deficit exhibited in the surplus, the directors stated that \$95,200 was expended for permanent betterments and improvements, and does not appear in the surplus.

At the annual meeting of stockholders of the company the following were elected for directors of the corporation for a period of three years: S. W. Lamson, E. C. Potter, J. H. Gray. A. J. Weckler retired from the board and the vice-presidency.

DECLARES 1907 WILL BE BIG YEAR

Wilson Ferguson, Treasurer of the Montello Brick Works, Reading, Pa., said that the output of the Montello group of plants for 1906 was 100,000,000 bricks, which is 26,000,000 ahead of 1905. Including the plants controlled by the United States Brick Company, among them the Reading Shale, Middletown, Mt. Gretna and Kaaterskill, the total output, he said, was 150,000,000, a total increase of about 50,000,000 over 1905, including the Montello group. The sales for use in Reading exclusively amounted to 35,000,000. Of the total product, 90 per cent. were common and the balance fancy bricks. The shipments were principally to points within 100 miles' radius of Reading. Mr. Ferguson declared it to be the Montello's greatest year and was hopeful of a still better one in 1907.

A NEW SELLING AGENCY AT MEMPHIS

The Memphis (Tenn.) Brick Supply company has made application for a charter, with a capital stock of \$40,000. The incorporators are G. W. Macrae, O. H. P. Piper, R. A. Speed, Frank H. Reid and John J. Bishop.

The new concern will handle the product of the Tennessee Brick company, and will take agencies for building material, cement, terra cotta, etc. The stockholders of the Memphis Brick Supply company and the Tennessee Brick company are practically the same, and the organization of the company is effected simply to divide the business with the parent company, to handle the work and add to its business the sale of paving supplies.

The new company will not erect a plant, but will simply establish offices in some centrally located up-town building, where sales will be made and orders taken.

WILL PUT UP A BIG BRICK PLANT NEAR PARR'S RUN

Several representatives of the Bituminous Coal Company of New York were in Moundsville, W. Va., for the purpose of inspecting the company's mine on Parr's Run. All of the party are interested financially in the company and were well pleased and satisfied with the progress and conditions of their property here.

At present there are about thirty men employed at the mine, the shaft of which has been sunk to a depth of 190 feet, and which will be drilled to a total depth of about 300 feet.

The principal object of the visit of the party was to decide on a site for the erection of a large brick plant, the probable location of which will be near the Parr's Run mine. This will be operated separately from the coal company, but will be backed by those connected with the bituminous people. J. J. Terhune will be president and manager of the brick plant, but as yet no other officers have been named. Following are those who were here and who will figure prominently in the new movement: J. J. Terhune, H. L. Rhomson, M. L. Malmrcs, O. O. Etline, W. C. Trinner, H. H. Luvinan, Dr. B. Balcom, Charles Foster, Mr. Hinchinson and G. A. Christiany, the company's attorney. They expect to have the plant ready for operation by March and will employ several hundred men at the new works.

SAND OR LIME BRICK OR BLOCK NEWS

Sia's cement brick factory at Midland, Mich., has been forced to close down on account of the high water.

The Jamaica (N. Y.) Brick & Concrete Construction Co. has been organized with \$5,000 capital. Directors are Philip Grass, W. A. Smith and E. R. Clark of Jamaica.

The Millholland Brick Co., Marion, Ohio, which went into the hands of a receiver some time ago, has sold its plant to Lenox Reber for \$14,000. Mr. Reber will put the plant in operation at once.

The Hydraulic Stone & Brick Co., Milwaukee, Wis., has amended its charter decreasing its capital stock from \$80,000 to \$40,000, and moving its place of business to West Bend and increasing the directors from three to five.

William Winter, of the Muskegon (Mich.) Cement Stone Co., is experimenting with cement brick in order to get a white instead of a gray brick. He is using lime to accomplish the purpose, claiming that the gray brick are objectionable to many.

The plant of Ft. Wayne (Ind.) Pressed Brick Co. was forced to idleness on account of the floods in the St. Mary's river, which so wet the sand that it was impossible to operate it. The company are behind in orders to the extent of 4,000,000 brick.

Frank M. Sears will build at Schenectady, N. Y. a sand lime brick plant for the American Sandstone Brick Machinery Co., of Saginaw, Mich, who have the contract for the building of a flat. Mr. Sears has been for the past year at Peterboro, Ontario.

The Lake Superior Sandstone Brick Co., Hancock, Mich., recently elected the following directors: Charles Briggs, P. P. Roehm, Fred Smith, J. W. Wyckoff and J. T. Reeder. They have rebuilt their plant but now will double the capacity, and work a day and night shift.

Edward Johnson, of the Sioux Falls (S. Dak.) Pressed Brick Co., is to build a \$25,000 sand lime brick plant at Watertown, S. Dak. The machinery has already been purchased from parties in Indiana and the plant will be made ready for operation as soon as possible.

The George A. Smith property at Ballston Spa, N. Y., has been sold by David Lyon of Schenectady, to a syndicate of New York capitalists who are represented by E. A. Kastenhubero, and it is announced that the new owners will build a large sand lime brick works using the sand on the property.

The Virginia Sand Lime Brick Co., Newport News, Va., has been incorporated with \$25,000 capital stock. The officers are T. M. Benson, president; J. T. Reed, vice-president and general manager, and W. H. Kellogg, secretary and treasurer. A site has been secured and a 20,000 brick capacity plant will be built at once.

Rapid progress is being made on the building of the Grant Brick Co.'s plant at the foot of Bay Forty Seventh St., Gravesend, L. I., N. Y. Sidney Grant is president and his partner, C. J. Grant, is treasurer. The machinery will be made in Chattanooga, Tenn., and the scheme is to convert the ocean sand into sand lime brick. Five rotary presses will be used, making 240,000 brick daily. They expect to turn out brick by May 1st.

MISCELLANEOUS ITEMS

The McArthur (O.) Brick Co. has increased its capital stock to \$100,000.

The Benton (Ill.) Brick Co. has been incorporated with \$15,000 capital stock.

The new brick making plant at Saltillo, Mexico, will be put into operation in February.

James S. Fitzgerald, Lenoir City, Tenn., wants information and prices on a brick making plant.

The Hilton Brick Works on West Front St., Dunkirk, N. Y., will soon be the property of the Dunkirk Ice & Fuel Co.

J. E. Sullivan, Gillette, Wyoming, has ordered machinery and will establish a large brick making plant at that place.

The Denton (Ky.) Plastic Fire Clay Co., has been incorporated with \$6,000 capital stock. The plant will be in Boyd county.

The Hammond (La.) Brick Co., Ltd., is in the market for a high grade automatic engine and 150 horse power water tube boiler.

Meredith & Croninger, Hartford City, Ind., who have manufactured tile for several years will put in additional facilities and make building brick.

Carl Strahle, proprietor of the Stanton (Neb.) Brick Works, has decided on an up-to-date improvement to his plant. A new dryer and kilns will be added.

The Kontite Brick & Development Co., Denver, Colo., has been incorporated with \$30,000 capital stock. Directors are Robt. F. Hunter, M. A. McCarren and Tad Danford.

The Martin County Brick & Tile Co has been incorporated with \$4,000 capital stock at Williamston, N. C., by W. H. Adkins, W. S. Barnhill, J. G. Barnhill and others.

The Western Brick & Supply Co., Hastings, Nebr., has been incorporated with \$100,000 capital stock by A. L. Clarke, C. B. Hutton, G. J. Evans, A. H. Farrens, and George Wilkes.

The Lindenwald Brick Co., Hamilton, Ohio, has been organized with \$15,000 capital stock. Incorporators are Frank X. Duerr, Henry Pater, George Pater, B. R. Millikin and Robt. N. Shotts.

The United Porcelain Face Brick Co., Newark, N. J., has been incorporated with \$500,000 capital stock. The incorporators are W. P. Meeker, 139 W. Kinney St., Ed. S. Rankin, J. S. Meeker and J. T. Roth.

The Kentucky Red Brick Co., to be incorporated, has leased land on the Lexington & Eastern Ry. at Lexington, Ky., and will establish a brick making plant. Col. John R. Allen will be president, E. S. Kinkead, sec. and treas., and Frank Hulett manager.

The Consolidated Brick & Tile Co., Winston-Salem, N. C., has been incorporated with \$125,000 capital stock. The incorporators are Geo. A. Hanes, president and manager; W. W. Chrisman, secretary and treasurer; W. M. Chrisman, vice-president. Works at Pine Hill, N. C.

Rudy R. Black is now the sole owner of the Black & Edwards Works at Mounds, Ill., he having purchased the interest of James C. Edwards, and will continue same as usual.

The Atlas Brick Co., Moxahala, Ohio, will put in a \$40,000 brick making plant.

R. C. Paterson, Hot Springs, Va., wants information and catalogues on brick making machinery.

Edward F. Overton, Laguire, Pa., is in the market for a 25,000 to 30,000 capacity brick making plant.

Charles Hanson, of Hanson Bros., Princeton, Ill., has gone to Bradford to superintend the yard there.

The Columbus (O.) Brick & Terra Cotta Co. has increased its capital stock from \$200,000 to \$300,000.

The Standard Tile Co., New York City, has been incorporated with \$10,000 capital stock. Directors are F. N. Carter, C. W. Portlock and C. E. Thorn, all of New York.

The Penbryr Brick Co., Bridgeton, N. J., has been incorporated with \$100,000 capital stock. Incorporators are Richard M. Moore, Foster C. Moore and Edward P. Bacon. The works is at Penbryr.

The stockholders of the Joseph Soisson Fire Brick Co., Connellsville, Pa., elected the following officers: Joseph Soisson, president; V. H. Soisson, secretary, and W. F. Soisson, treasurer and manager.

To make it possible to repair their own machinery the Corona Pressed Brick Co., Los Angeles, Cali., is erecting a machine shop and will install it with machinery. Thomas Gavin will be the superintendent of this department.

The Devonshire Brick & Ceramic Co., of Columbus, O., which has bought the Roseville (O.) Brick & Terra Cotta Co.'s plant, will change the machinery which was for manufacturing paving brick so that they can make face and glazed brick.

A Mr. Stoner will build a brick and tile works at Delta, Iowa. Ground has been purchased for same.

The Fairfield Pot. & Clay Co., Lancaster, Ohio, has increased its capital stock from \$25,000 to \$50,000.

Seward Bros., Mason City, Illinois, have contracted for a steam power brick machine to replace their horse power machine.

R. D. McManigal, Logan, O., has accepted a position as superintendent of a brick making plant at Ft. Smith, Arkansas.

The Doyle Brick Co., Utica, N. Y., has acquired title to thirty-five acres of clay land adjoining its plant and will increase their capacity.

The Boyne City (Mich.) Clay Products Co., have installed a 12-foot fan for taking the waste heat to their dryer. They are also making other improvements.

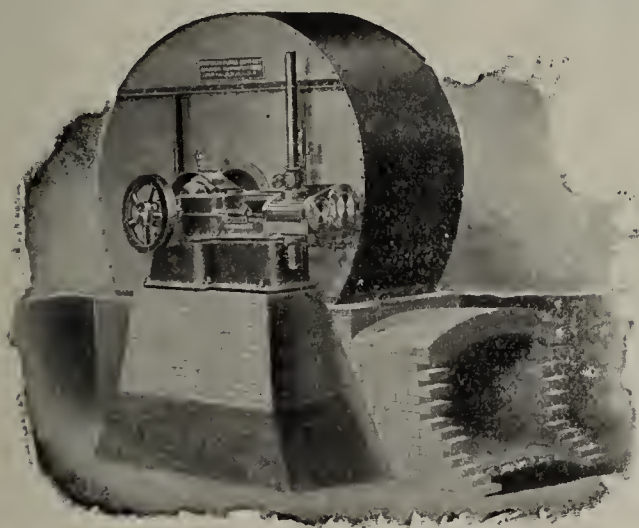
A stock company is being formed to build a brick plant at Mandeville, La. Enough stock has already been subscribed to insure the success of the venture.

Dr. J. F. Willard, Colorado City, Colo., is negotiating with outside parties to build a paving brick plant near that city, utilizing the shale deposit which is found there.

Plans have been made and contracts are being let for a \$30,000 addition to the plant of the American Refractories Co., at Joliet, Ill. It is expected the improvement will be in by the first of April.

The Alliance (O.) Clay Products Co., which constructed their plant that has been running for four months, re-elected the old officers. The plant has been profitable all through the experimental stages.

Buffalo Waste Heat Dryer.



"Buffalo" Waste Heat Fan Direct Connected Engine
Bottom Horizontal Discharge.

The first **WASTE HEAT DRYER** bore the name "BUFFALO." Economy is the watchword and in the third of a century since we began solving drying problems, there has been steady engineering progress.

"**BUFFALO**" **WASTE HEAT FANS** take the **WASTE HEAT** from the kilns and deliver it to the drying chambers, which can be automatically kept at any temperature and humidity. "BUFFALO" **FANS** have water-cooled bearings when necessary.

APPLICABLE TO BRICK, TILE AND TERRA COTTA PLANTS.

Our thirty years of success is due to a constant study of clays.

Write, stating requirements, and ask for catalog.

BUFFALO FORGE COMPANY, BUFFALO, N. Y., U. S. A.

CANADIAN BUFFALO FORGE COMPANY, MONTREAL, CANADA.

Savannah, Mo., is to have a new brick yard.

Improvements are being made to the Blue Ridge Enamel Brick Co.'s plant at Saylorsburg, Pa.

The Ohio Valley Clay Co., Steubenville, O., has increased its capital stock from \$200,000 to \$260,000.

N. G. Archer has sold his interest in the Carmi (Ill.) Tile Works to Dr. J. A. Boyer, who will conduct it in partnership with Frank Griffith.

The Wyandotte Pressed Brick Co., Augusta, Me., has been incorporated with \$200,000 capital stock. President and treasurer, J. Berry of Augusta.

The National Clay Products Co., Jersey City, N. J., has been incorporated with \$50,000 capital stock by J. J. Murphy, E. H. Geren and John I. Mara, of Jersey City.

Marion G. Wright has purchased Dr. W. F. Smith's interest in the Bippus (Ind.) Tile Co., and will take an active part in the management. The plant will be enlarged.

The Jamaica (N. Y.) Brick & Construction Co. has been incorporated with \$50,000 capital stock. Directors are Philip Grass, William A. Smith and S. A. Clark of Jamaica.

Construction has been started on the new works of the Kaysville (Utah) Brick Co., which will make 100,000 brick daily. John R. Barnes is president, John Dorn, vice-president, and Sidney M. Bamber, secretary and manager.

The Chanute (Kansas) Brick & Tile Co., capitalized at \$125,000, will build a 100,000 brick daily capacity plant. W. S. Cochrane is president, E. G. Potter, vice-president; O. A. Kentner, secretary and general manager, and J. C. Kiser, treasurer.

J. A. Williamson, Belhaven, N. C., wants information regarding tile machinery.

The Danville (Ill.) Brick Co. has increased its capital stock from \$90,000 to \$190,000 and will make improvements accordingly.

The Bessemer Limestone Co., Youngstown, O., will enlarge its brick plant at Bessemer so that by July the capacity will be doubled.

The Davenport (Ia.) Paving Brick & Tile Co. will put an electric light plant in its works at Buffalo, also supply the town with lights.

G. W. Mahan, the superintendent of the brick company at Moline, Kansas, that moved its works from Iola, will soon be able to turn out brick.

The Excelsior Pressed Brick Co., St. Louis, Mo., has been incorporated with \$10,000 by Albert Wenzlick, A. F. Berresheim and George J. Berresheim.

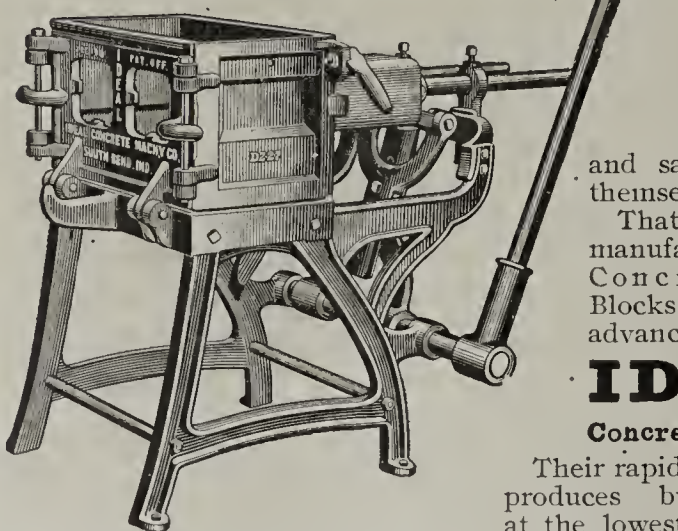
Articles of incorporation have been filed by the Plymouth Clay Products Co., Ft. Dodge, Iowa, capital stock \$250,000. They will build a large sewerpipe plant.

A party of capitalists have organized the Garvanza Brick Co. and have erected a plant on Avenue 60, Los Angeles, Cal., that is equipped to turn out 60,000 brick per day.

W. H. Horrum, Auburn, Nebr., will improve and enlarge his brick and tile plant. He has a fine bed of shale on the property out of which he expects to make paving brick.

Arthur C. Sharpley has sold the Bessemer (Ala.) Brick Works to Messrs. Carter, Fitzpatrick & Nolan, who will in the future have charge of the concern. Mr. Sharpley will spend the summer in England, being of poor health.

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The Ideal Concrete Block Machinery makes blocks at a cost that permits the underselling of all other building material.

Adaptable as to size of block and countless designs of face and natural stone effect.

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One Hercules Steam Brick Machine, one 40 horse power gasoline engine. One semi-automatic side-cut brick cutter, made by Wallace Manufacturing Co., One Kells brick machine, lot of wheelbarrows and trucks. All in good condition. Address

W. H. VANDER HAYDEN,
Ionia, Mich.

BRICK AND TILE MACHINERY AT SACRIFICE

Where a country is tiled, factories are offered complete, or in part, Cheap. Have several Brewer Mills for sale, and others.

Engines, Boilers, Crushers, Drying Pipes, etc. If you wish to buy or sell write

Brick and Tile Machinery
Secor, Ill.

FOR SALE.

An up-to-date brick plant. Capacity 35,000 brick Cheap fuel and labor. Fine shipping facilities and an abundance of pure loose clay. Local demand takes almost entire output at good price. Will bear close investigation. Good reason for selling.

Address, WM. M. READ,
Princeton, Ind.

MACHINERY FOR SALE

One No. 2 Giant brick and tile, machine with dies for tile from 3 to 8 inches and side cut brick die. One Bunsing automatic tile cutter. One Bunsing automatic block and end cut brick cutter.

\$100 worth of repairs would put them all in first-class condition. Will sell cheap. Reason for selling, am using larger capacity. 1801 1/2 Second Ave. Rock Island, Illinois.

BRICK YARD FOR SALE.

Brick Yard for sale cheap. A bargain to the right party. Good market at hand. For further information address

BRICKMAKER,
Care Clay Record, Chicago, Ill.

ROOFING TILE MAN WANTED.

WANTED—A young man experienced in the roofing tile business to act as Chicago city salesman Apply giving experience and reference.

Roofing Tile, care CLAY RECORD,
Chicago.

FOR SALE

One H. Brewer & Co. Second-hand No. 5 Brick Machine.

One H. Brewer & Co. Stone Separating Crusher.

One 8 foot Pug Mill. H. L. SWIFT
Riverside, Iowa

MACHINERY FOR SALE

The following machinery not used by us but all in good condition, will be sold at very reasonable prices.

One Penfield Single Mould Power Re-Press, capacity 10,000 a day.

Two Fate Company Bunsing Automatic Side cutting tables. American Enamelled Brick & Tile Co. 1 Madison Ave., New York.

FOR SALE

20,000 Wooden Pillets, 32 inches by 10 inches, 5/8 inch lumber, legs 3 1/4 inches high, 1 1/4 inches thick. A bargain if taken at once. Address

JASPER ADAMS
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FOR SALE

One Second-hand Four Mould Dry Press, in good order One of the best presses on the market. Answer quick if you want it.

Address G. care Clay Record
Chicago, Ill.

PLANT FOR SALE.

FOR SALE—A first-class Brick and Tile Plant in northern Minnesota, capacity 50,000 daily. Good reason for selling.

Address, JOHN C. PETERSEN,
Pelican Rapids, Minn.

SUPERINTENDENT WANTED

An experienced paving brick-maker who will take some stock in a paving brick company to be formed at Cheboygan, to make 30000 to 50000 brick a day. An abundance of the finest kind of shale, easily handled and a very good market. Superintendent will have full charge, address.

A. M. GEROW, Cheboygan, Mich.

ENGINES AND J LERS

Corlis engines, 20x48, 18x36, 16x42, 12x36. Also 40 other sizes and styles in stock.

Boilers, Tubular, 84x18, 78x16, 72x18. Also 60 other styles and sizes in stock.

Send specifications of your requirements and we will make you a proposition that will interest you.

THE RANDLE MACHINERY CO.
1732 Powers St., Cincinnati, Ohio.

MANAGER WANTED

An experienced brick maker as superintendent and manager of a new brick plant, located on the Hudson River. River and rail shipments to New York. We are equipped with three machines, plenty of power, entire new equipment. Clay and sand within 600 feet of the machines, conveyed over trussel on cars to machines. Large sand bank from which abundance of sand can be shipped. Will require an investment from party wishing this position. Will give to right person absolute charge of plant. Address

C. R. SHEFFER, Pres.
Mechanicsville, N. Y.

FOR SALE.

Right and left-hand One, Two and Three Way Switches, of various gauges, radius and weight rail, at special prices.

THE ATLAS CAR & MFG. CO.,
Cleveland, Ohio.

FOR SALE—CHEAP—New and re-laying rails, 12, 16, 20 and 25 pound. For prices, address

ATLAS CAR & MFG. CO.,
Cleveland, Ohio.

FOR SALE

One Mascot machine with brick and tile dies. One end brick cut-off, style F, made by American Clay Machinery Co.

One hand side cut brick cut-off. These at your own price. Reason for selling have changed to a soft mud yard.

BLANCHARD BRICK & TILE CO.,
Blanchard, Iowa.

PALLETS FOR SALE.

FOR SALE—8,000 New All Steel Foot Pallets 34x10 inches In good order. Can be had at a bargain. Address,

THE CLEVELAND CAR CO.
West Park, Ohio.

FOR SALE.

One Indiana road machine, belt; pulleys. One 30 horse power Boiler, used one year. 60 brick cars, damaged by fire, parts easily straightened, very cheap.

4,000 feet, one inch steam pipe for dry kilns.

One Wellington brick machine, cost \$800, will sell for \$400 and load on cars. A man having \$2000 to put in brick and tile business can make a good deal by writing me.

C. S. BEADLE,
Saulte Ste. Marie, Mich.

POSITION WANTED

Young man wants position as manager or superintendent stiff mud brick yard. Small face brick yard preferred. Best references. Address

Pittsburg, care Clay Record
Chicago, Ill.

FOR SALE OR RENT.

A brick plant, with 11 foot vein of shale, burns a beautiful red or buff face brick and first-class pavers. Will make terra cotta or dry pressed brick.

Address Box 12,
Bidwell, Ohio.

PRACTICAL MAN WANTED

Wanted a practical man that can make an investment to superintend the installing of a plant and act as superintendant thereafter, address,

Practical, care Clay Record,
Chicago, Illinois.

BRICK AND TILE FACTORY FOR SALE CHEAP

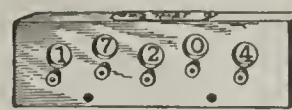
Good Sale for all the brick and tile you can make. Located in a county seat. Almost new machinery. No. 10 Brewer Brick and Tile Machine Everything in first-class repair. Reason for selling no experience. Plenty of clay and shale handy. Call or address

W. W. BLAY,
Rushville, Ills.

FOR SALE CHEAP.

One Monarch Brick Machine No. 166, capacity 35,000. One Brewer Clay Crusher, one Sander and Dump Table, four Brick Barrows, three Brick Trucks. About 16,000 Lath Pallets. Shafting and Pulleys. All the above are in good condition. Will sell all or part to suit purchasers. Address,

PFEFFER & SON,
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No better made, cut from
\$8 and \$10, to
4 Wheel, \$3.00
5 Wheel, \$3.25
Guaranteed.

Sold by all dealers
Paper Joggers quoted.
R. A. HART, 41 White St., BATTLE CREEK, MICH

FOR SALE OR TRADE.

Two Brick and Tile Plants in Iowa and Illinois, now running. Address,

THE KILN DOCTOR,
514 Fourth Street, Dayton, Ohio.

BRICK PLANT TO LEASE

Will lease my brick plant at Sutton to good party for one-third profit or one-fifth of the out-put. Plenty of good clay. Good market.

S. HUNZIKER,
Sutton, Neb.

STEAM SHOVEL WANTED

WANTED—A second hand steam shovel of small capacity. Answer quick.

The Hancock Brick and Tile Co.
Finley, Ohio.

PARTNER WANTED.

A good, reliable man of experience, with some capital to invest in and take charge of a new Dry Press Brick Plant. Plenty of shale, and good market for all the brick. Address

DENIS, care Clay Record,
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HELP WANTED

WANTED—A man who has worked in the shipping department of a clay pressed brick plant. Steady work all the year. State experience and salary expected.

INDIANAPOLIS COMPOSITE BRICK CO.
Indianapolis, Ind.

FOR SALE

Fine opportunity. Money making 30,000 capacity soft mud brick yard in best building town in Indiana. Can't supply the demand. Owner has larger interests. Easy terms. Write for details.

TERRE HAUTE PRESSED BRICK CO.,
Terre Haute, Indiana.

WANTED

To buy or lease a brick plant having shale or fine clay, raw material and down draught kilns. Address

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Chicago, Illinois.

YARD TO LEASE

To Lease, partly dismantled brick yard on dock in Mich. Lake Shore town; government harbor and P. M. Ry. Chambers machine, 50,000 capacity. Abundance of clay adjoining plant. Makes white face brick. Cheap labor and fuel. Address

C. M. 345 Ohio St., Chicago.

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ARE DURABLE, HANDSOME
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Big Money Made by Manufacturing Them

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DAYS

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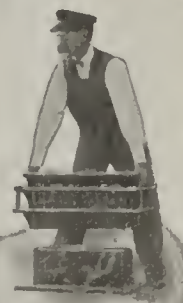
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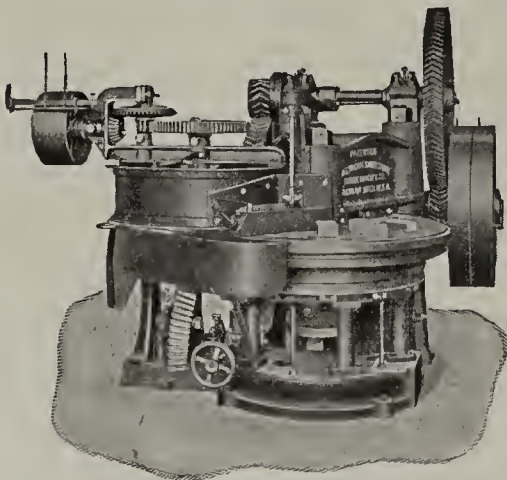
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by remodeling one
kiln or building one
new one for \$100.00.
Write for particulars to

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514 West Fourth St.
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**Improved Komnick Rotary Presses**

Are now being built with extra table for making fancy brick,
on which double pressure is exerted.

Don't confuse our Practical System with the so-called
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tical Machinery**, the **Practical Press**, the **Practical Hydra-
tion** and the **Practical Outfit**, which is **Manufactured in our
own Shops**, under the supervision of **Practical Men** with
Practical Experience.

Our plants are **installed under the supervision of Prac-
tical Engineers** who know how **Sand-Lime Brick** should be
and can be made. We have **Practical Plants Running
Successfully** to show to prospective investors.

WE ARE NOT SCIENTISTS

We **Produce Results**, because we are the **Oldest Practical
Sand-Lime Engineering Company** Doing Business in the
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**Manufacturers of Plain and Fancy
Brick, Cement Brick and Blocks**

H. W. Cosby, Superintendent and General Manager.

South Boston, Va., January 19, 1907.

Marion Machine, Foundry and Supply Co.,
Marion, Ind.

Gentlemen:—

As regards the Rust Clay Feeder we bought of you last year, will say
it has been in use in our branch yard at Houston, Va., since last July and
is giving **PERFECT SATISFACTION**. It practically saves us two men
besides doing the work **BETTER** and with **REGULARITY**.

The greatest trouble brick men have is getting hands to feed regu-
larly—they will over feed and choke the machine break or run belts off
and then sit down and rest while the owner labors to repair and start up
again. Your Clay Feeder is perfect and is indispensable to any brick
manufacturer who wishes to make a good brick at lowest cost.

Yours truly,

Signed by H. W. Cosby, Supt. and Gen. Mgr.

BOSTON BRICK CO.

Marion Machine, Foundry and Supply Co.
Marion, Ind.

Something New In Brick Kilns and Dryers



The Dennis Double Chamber Up and Down Draft Brick Kilns and Direct Heat and Hot Air Brick Dryers show many new features that make them superior to all others. Economical, durable and strong in construction and operation, having many points of advantage that appeal to practical brick-makers. Patented April 14, 1903 and September 8, 1903. Brick plants installed and put in operation. Write for booklet. Correspondence solicited.

F. W. DENNIS,
145 Water St., Norfolk, Va.

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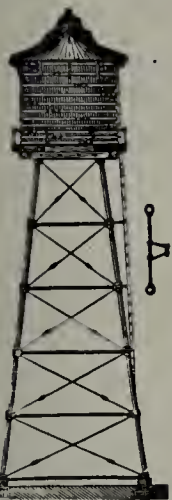
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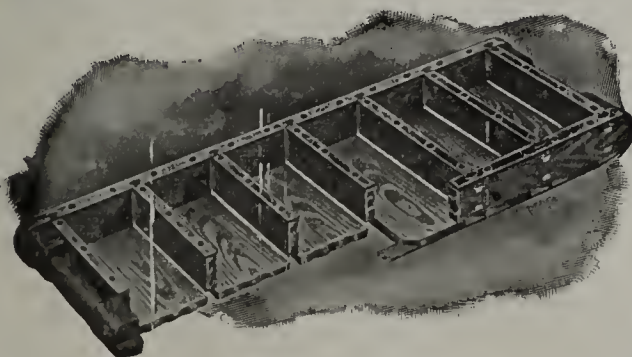


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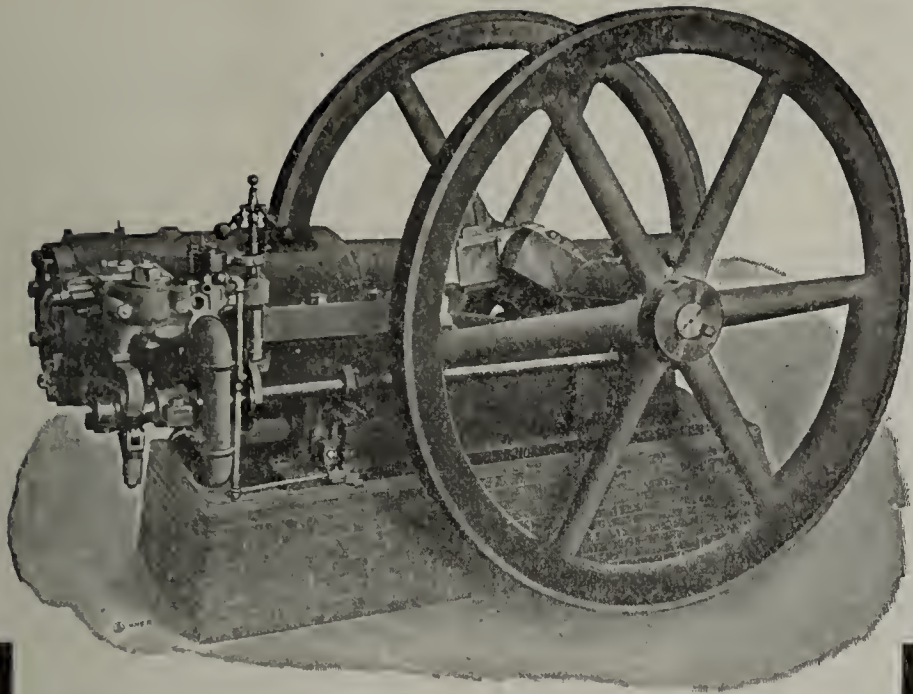
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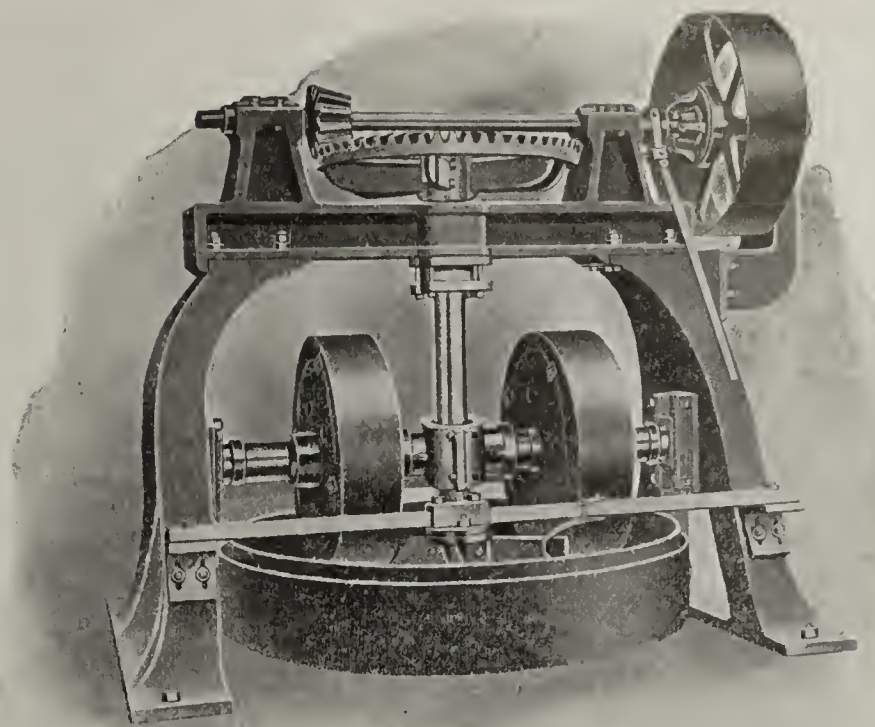


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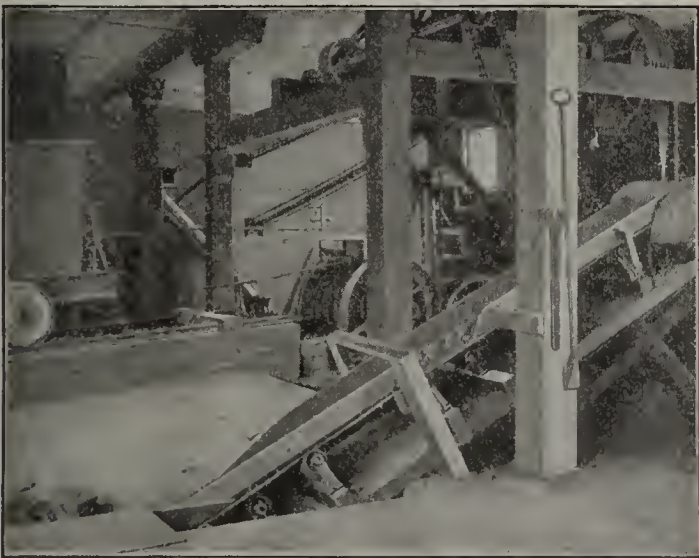
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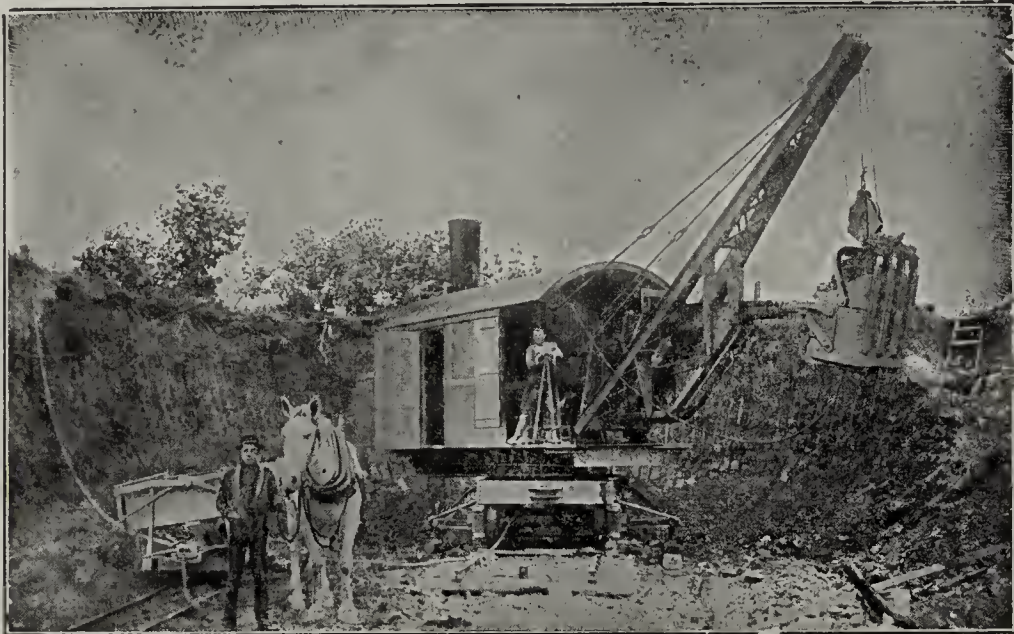
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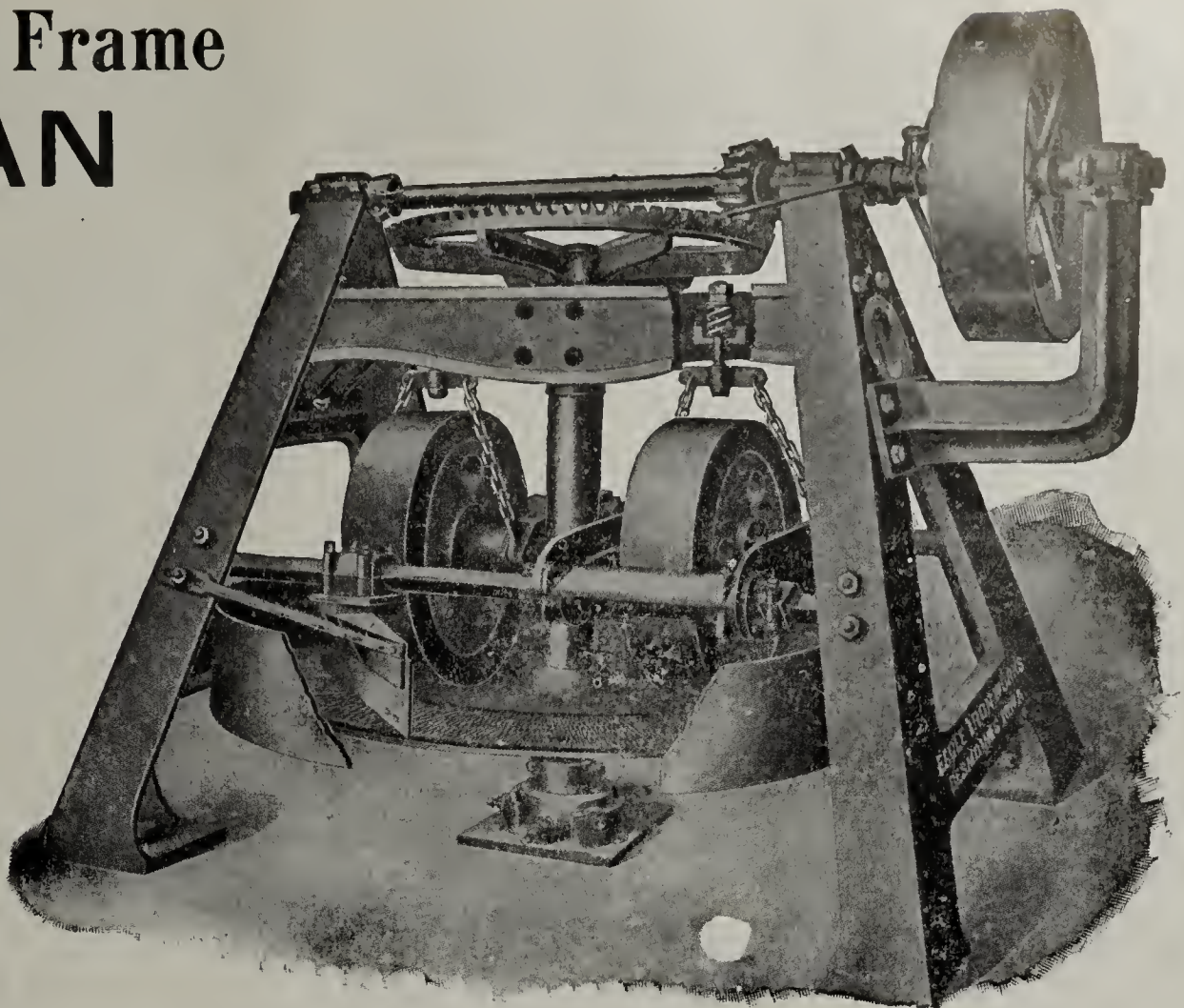
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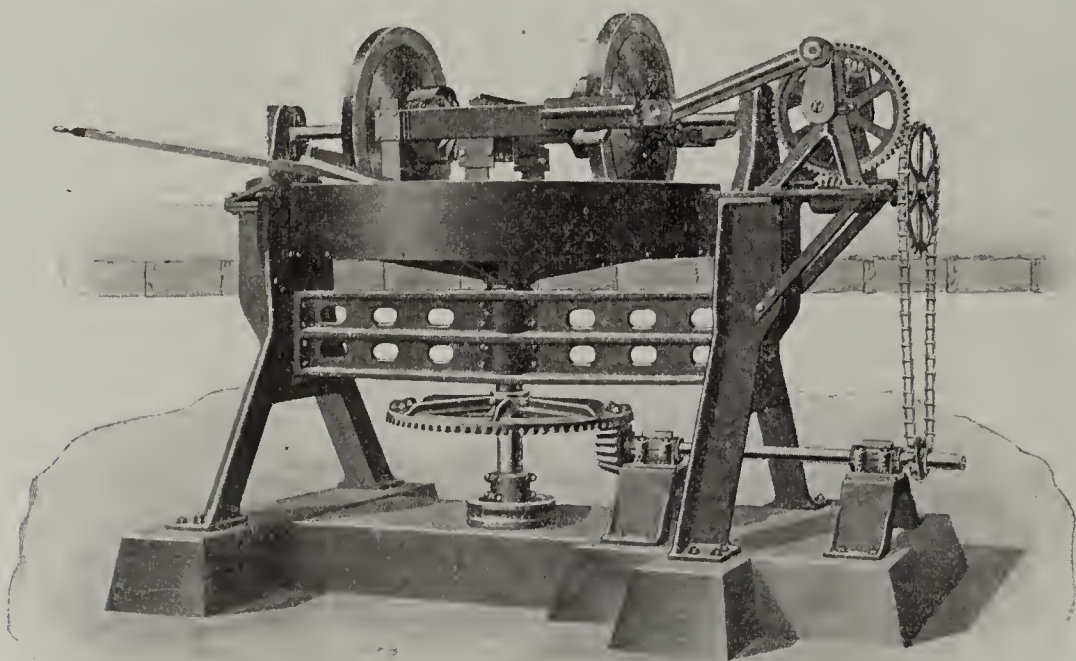
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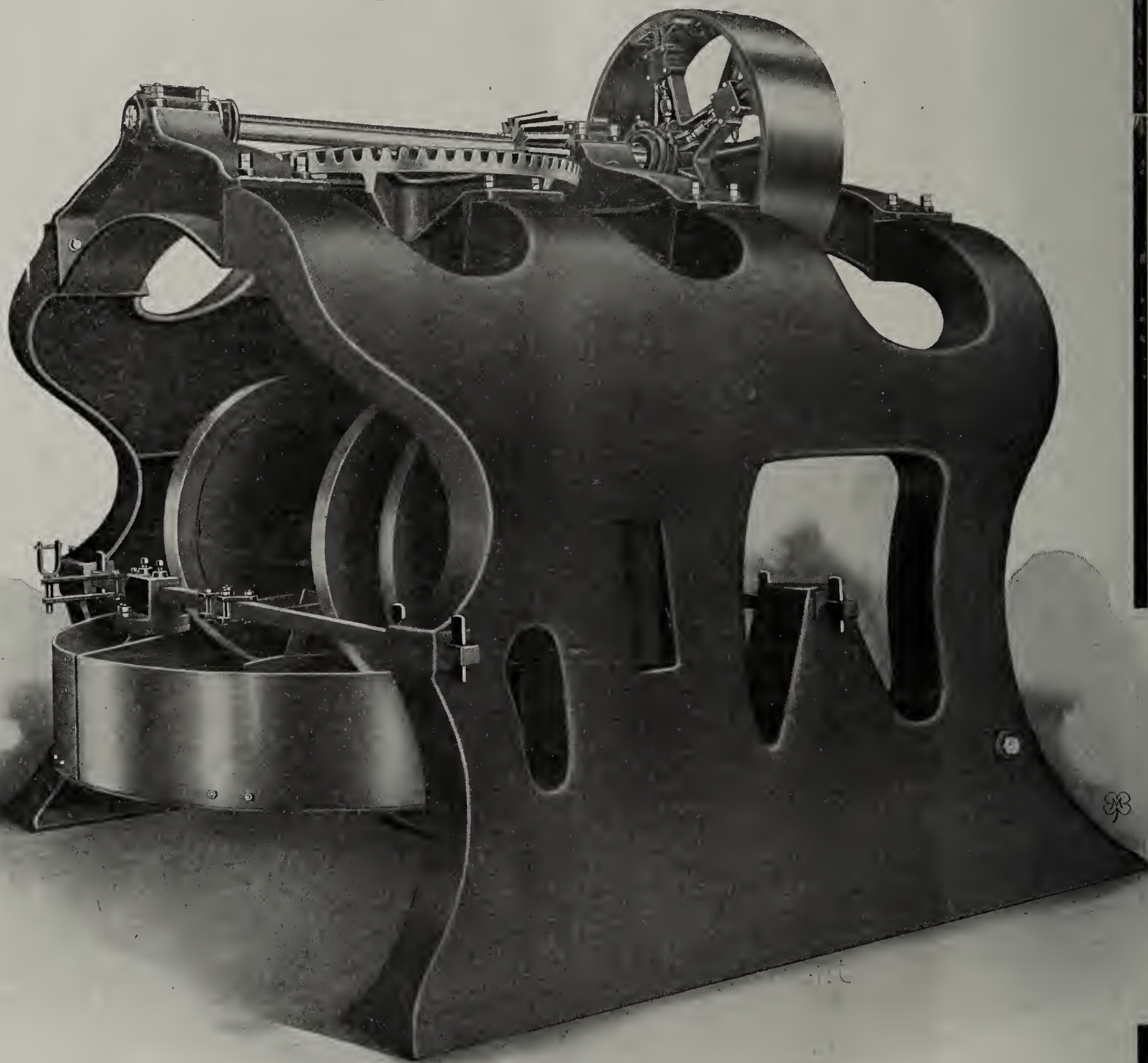
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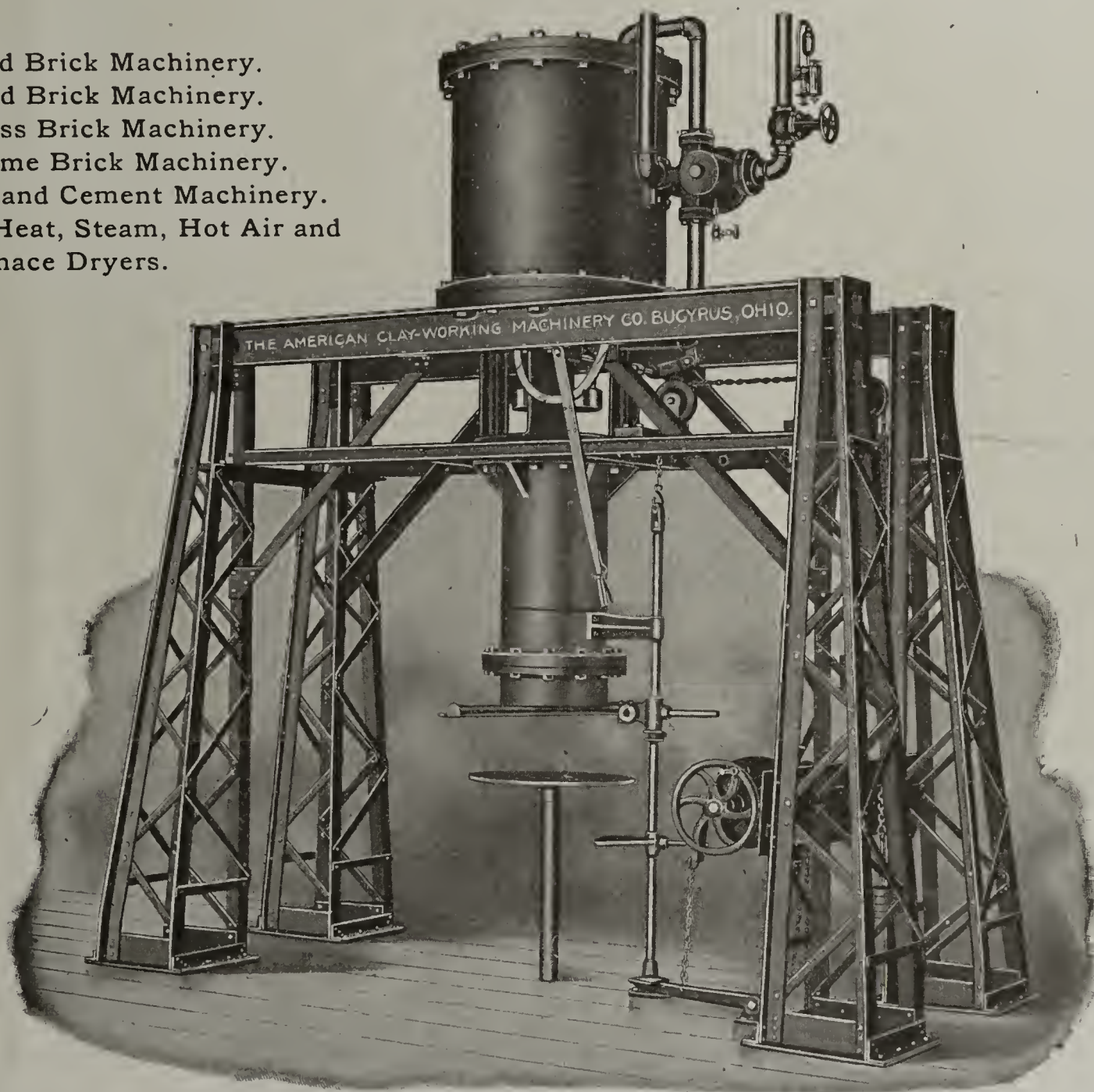
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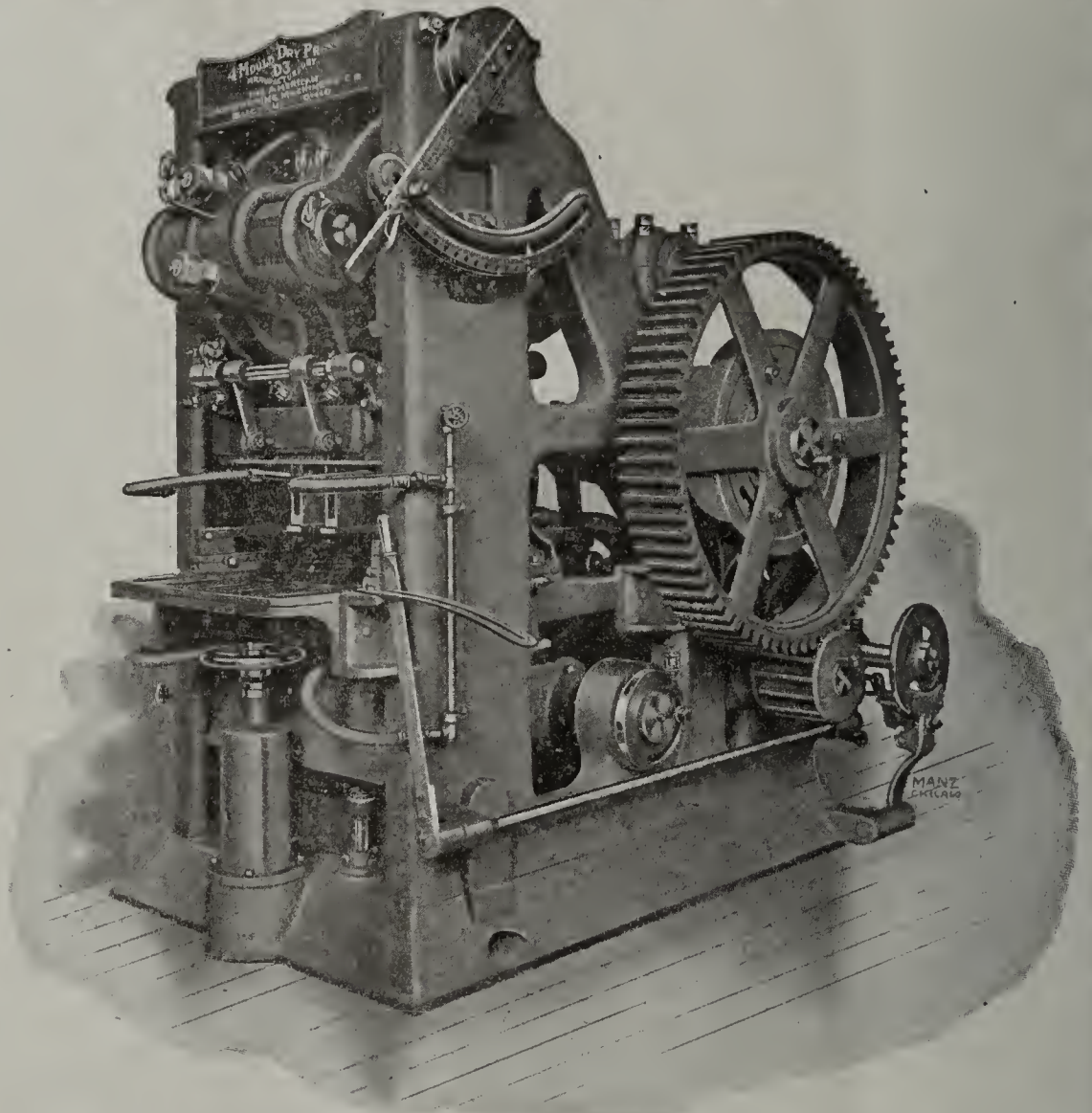
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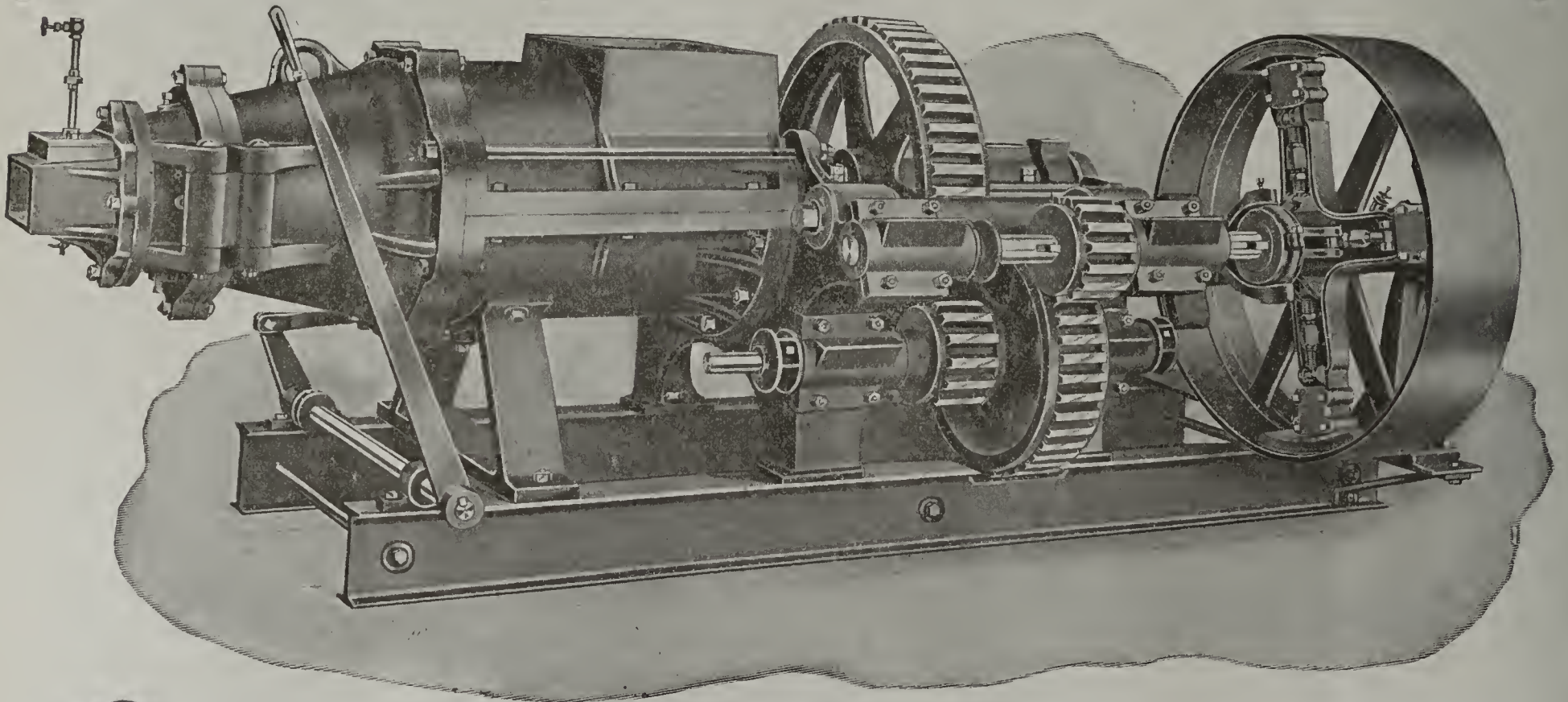


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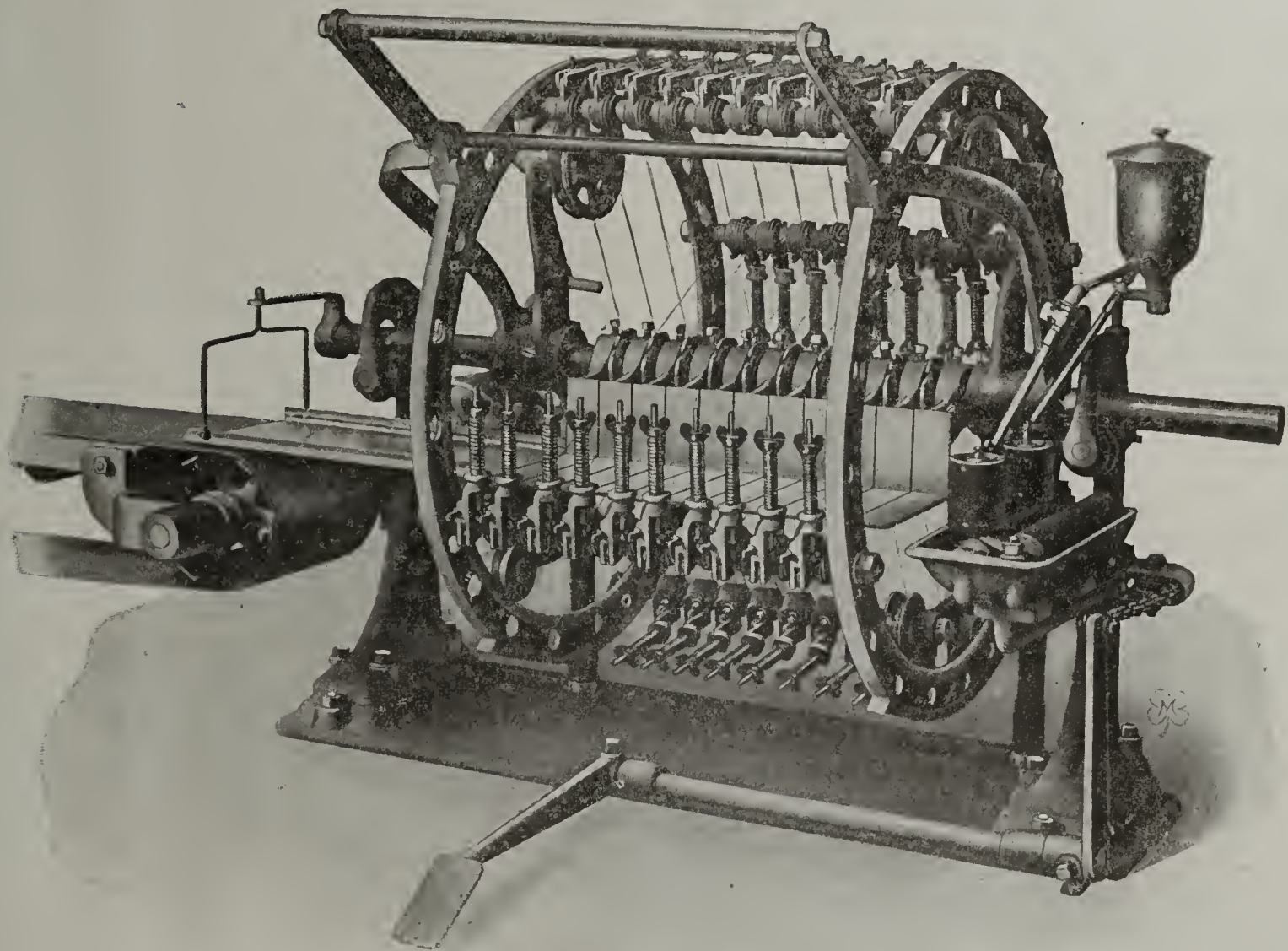


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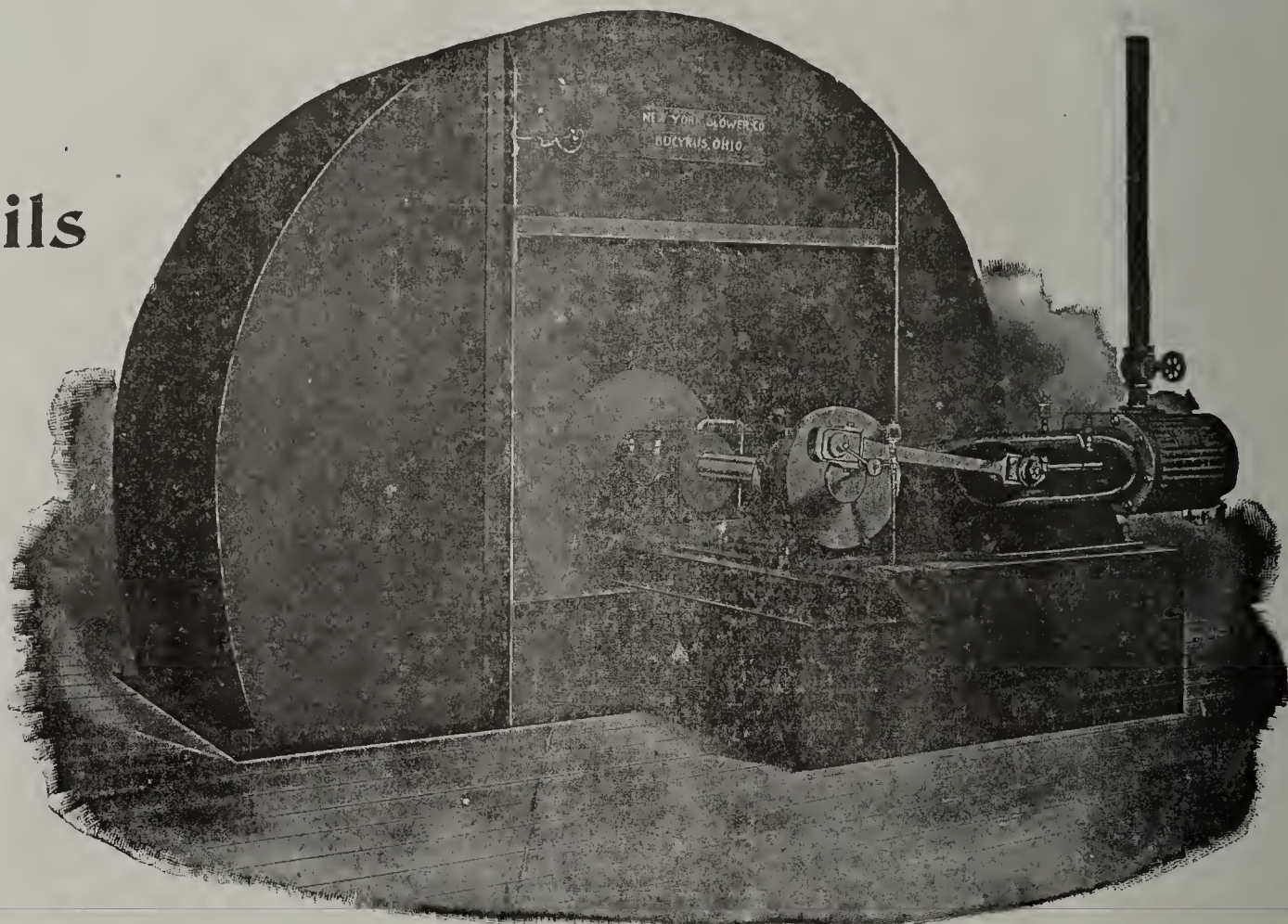
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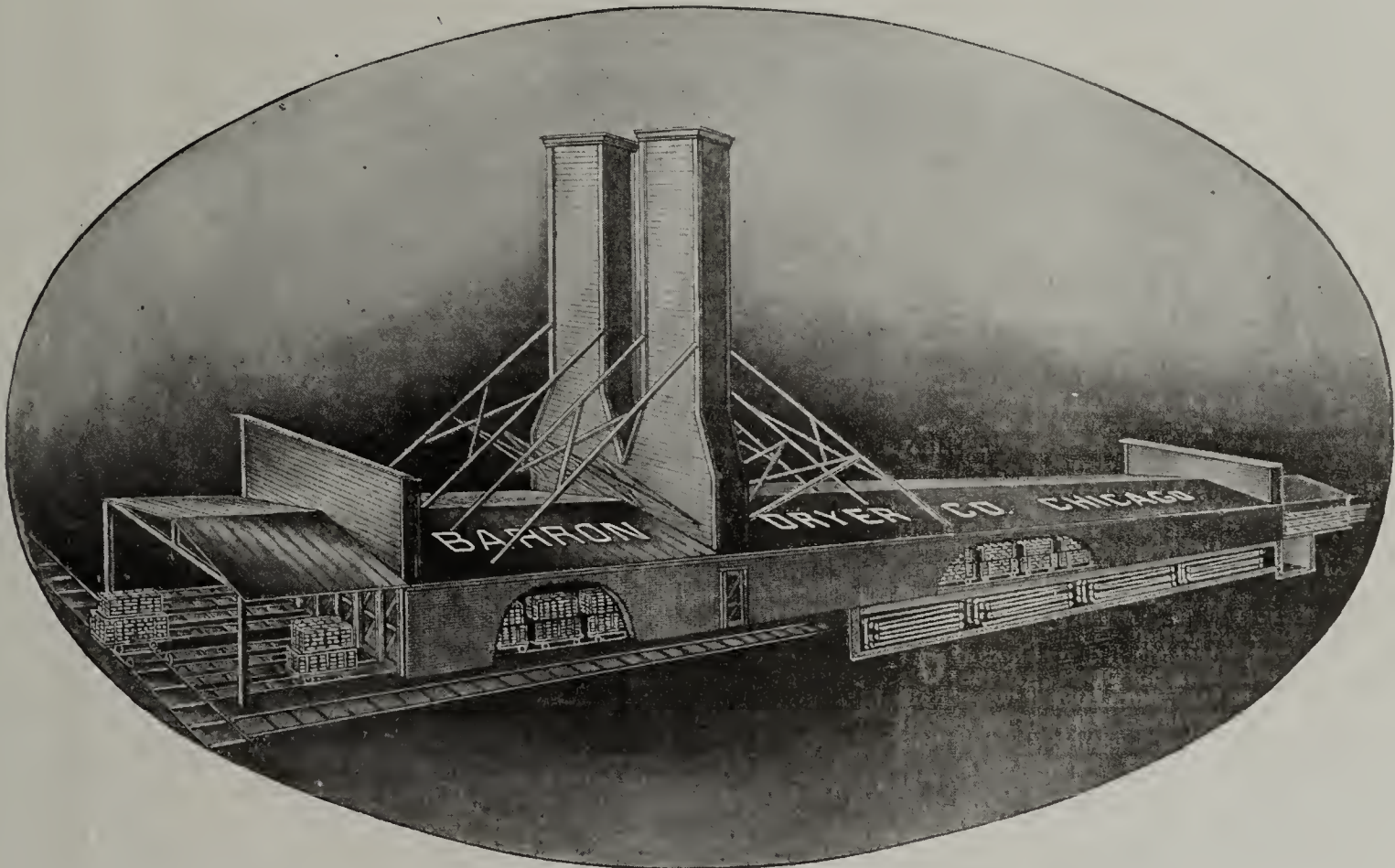
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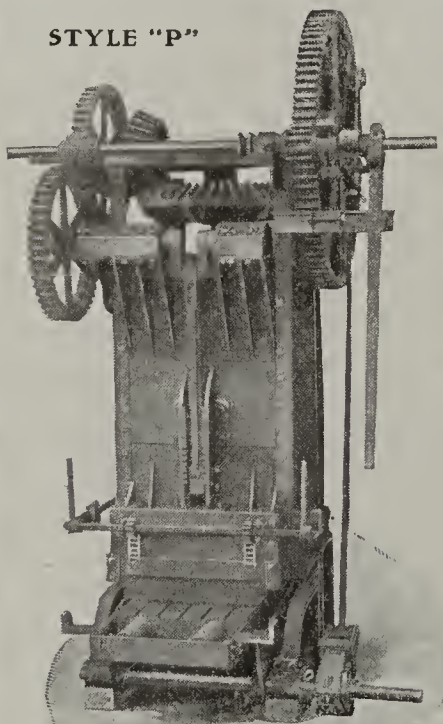
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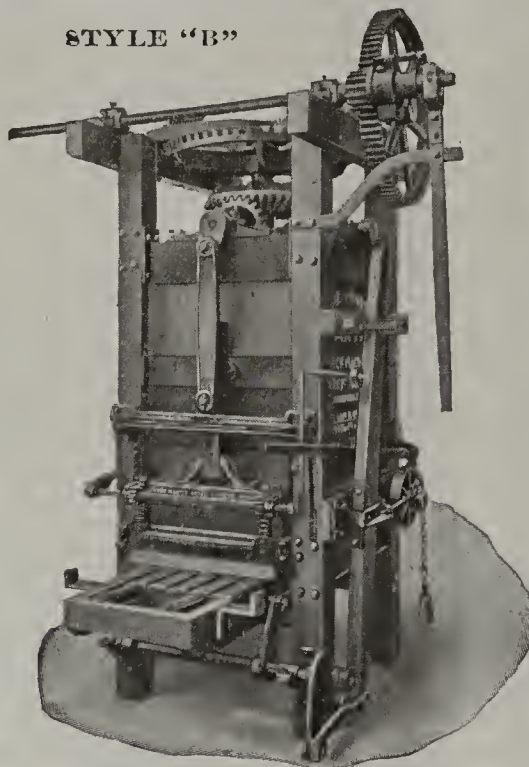


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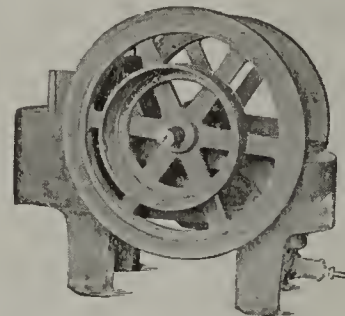
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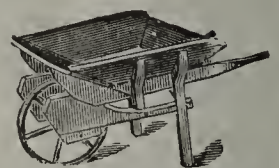
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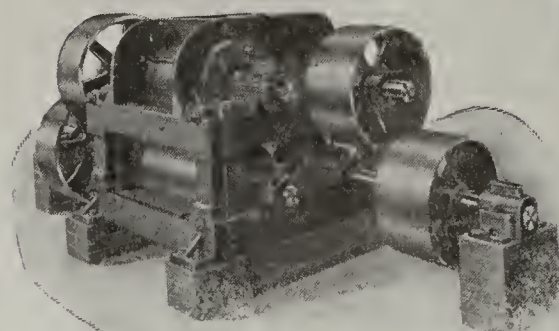
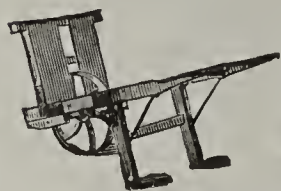
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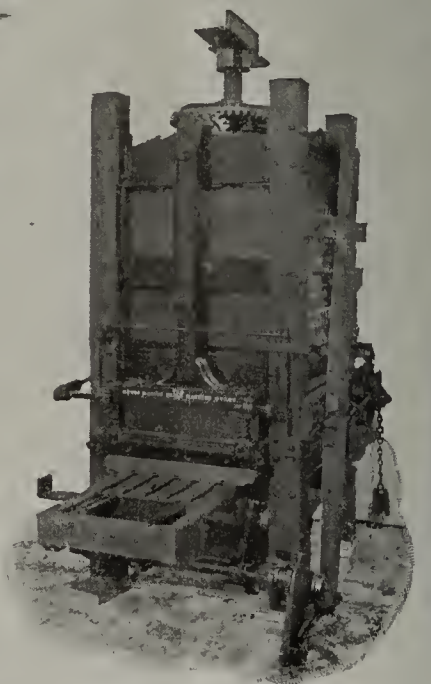
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MARTIN

P. O. DRAWER 587
 LANCASTER, PA.

THE "MARTIN" RACK PIPE STEAM BRICK "DRYER SYSTEM"



PATENTED

February, 22d, 1898, No. 599509
October 10, 1905, No. 95520
November 14, 1905, No. 804489



This Dryer, and the design in arranging it, are under the protection of the United States Government by virtue of patents granted. Patents have also been taken out in all the principal foreign countries. We are the sole owners and control these important patents and have authorized NO ONE to manufacture or sell the "MARTIN"

RACK PIPE STEAM BRICK DRYERS

NO
BRICK
DRY
OVER
NIGHT



LABOR
SAVING
THROUGHOUT

ADAPTED FOR SOFT-MUD OR STIFF-MUD BRICK

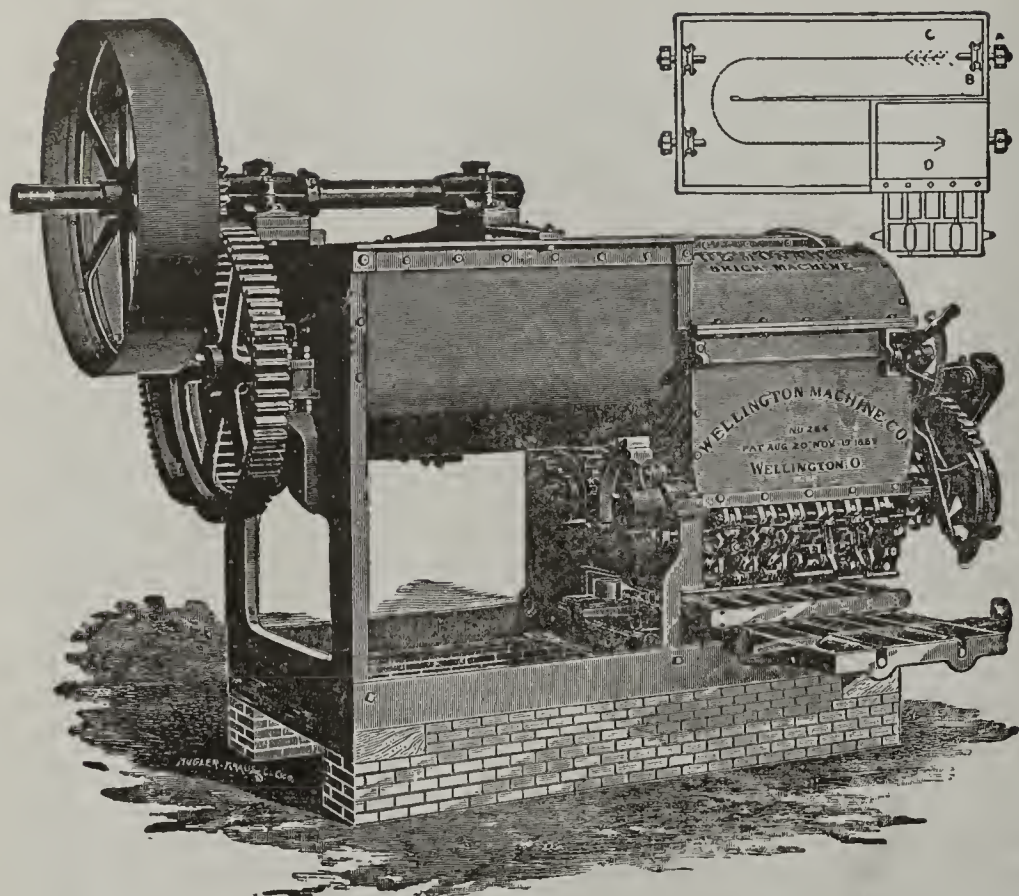
SUPERIOR IN EVERY RESPECT TO ANY OTHER SYSTEM—Labor Saving Throughout. Dispenses with Truckers and car Pushers. Pallets Automatically Return to Brick Machine. Quick to install and low in price, and takes up very little Yard room.

The sale and construction of the "Martin" Rack Pipe Steam Brick Dryer is under the direct supervision of the Factory Office at Lancaster, Pa.

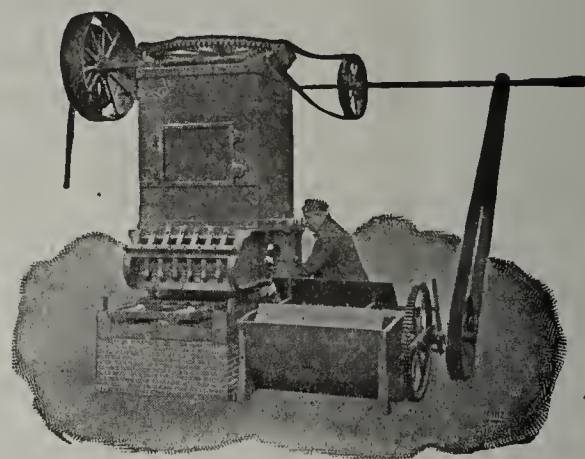
FOR FURTHER INFORMATION, ADDRESS

THE HENRY MARTIN BRICK MACHINE MFG. CO., Inc.
LANCASTER, PA., U. S. A.

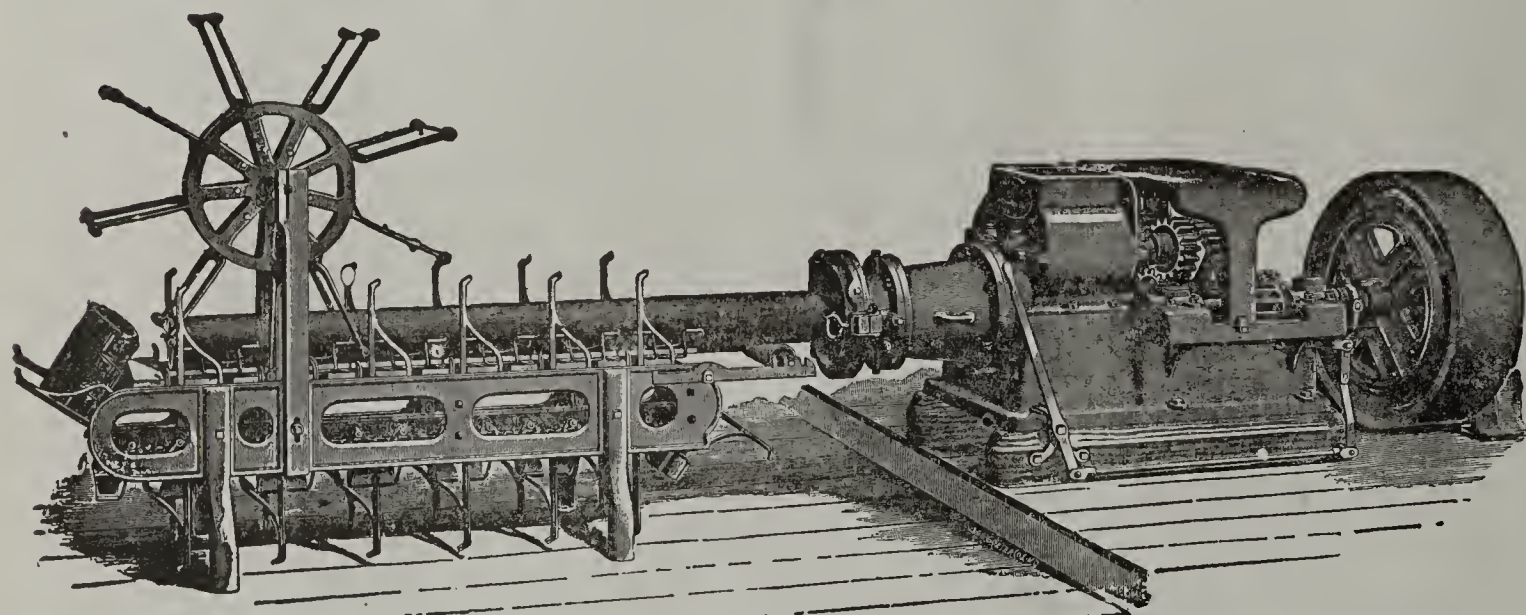
BRICK and TILE MACHINERY



MONARCH STOCK BRICK MACHINE
Capacity.. from 30,000 to 50,000

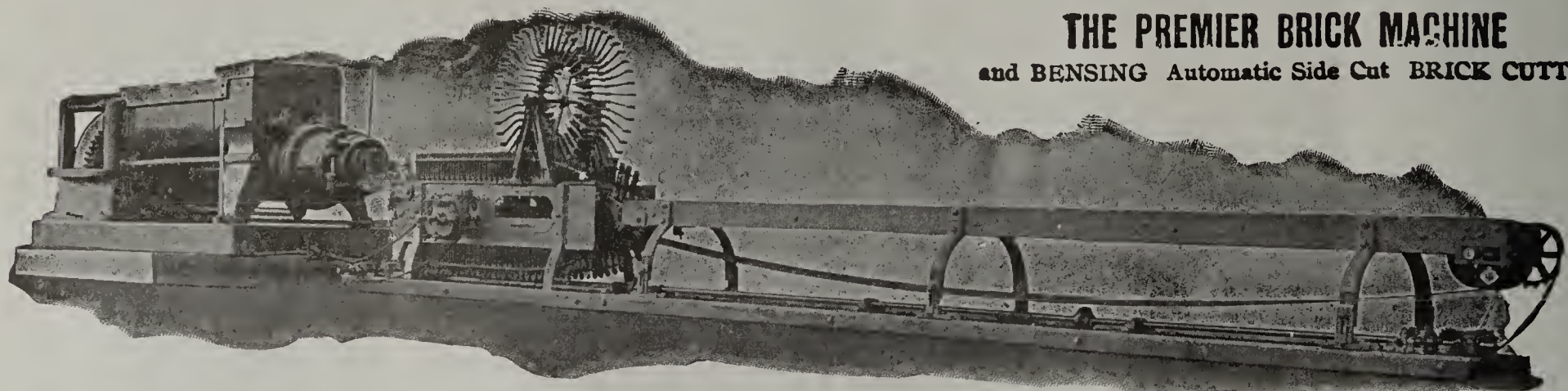


THE QUAKER
Horse or Steam Power. Capacity, 20,00 to 35,000



BRICK OR TILE MACHINE WITH AUTOMATIC TABLE

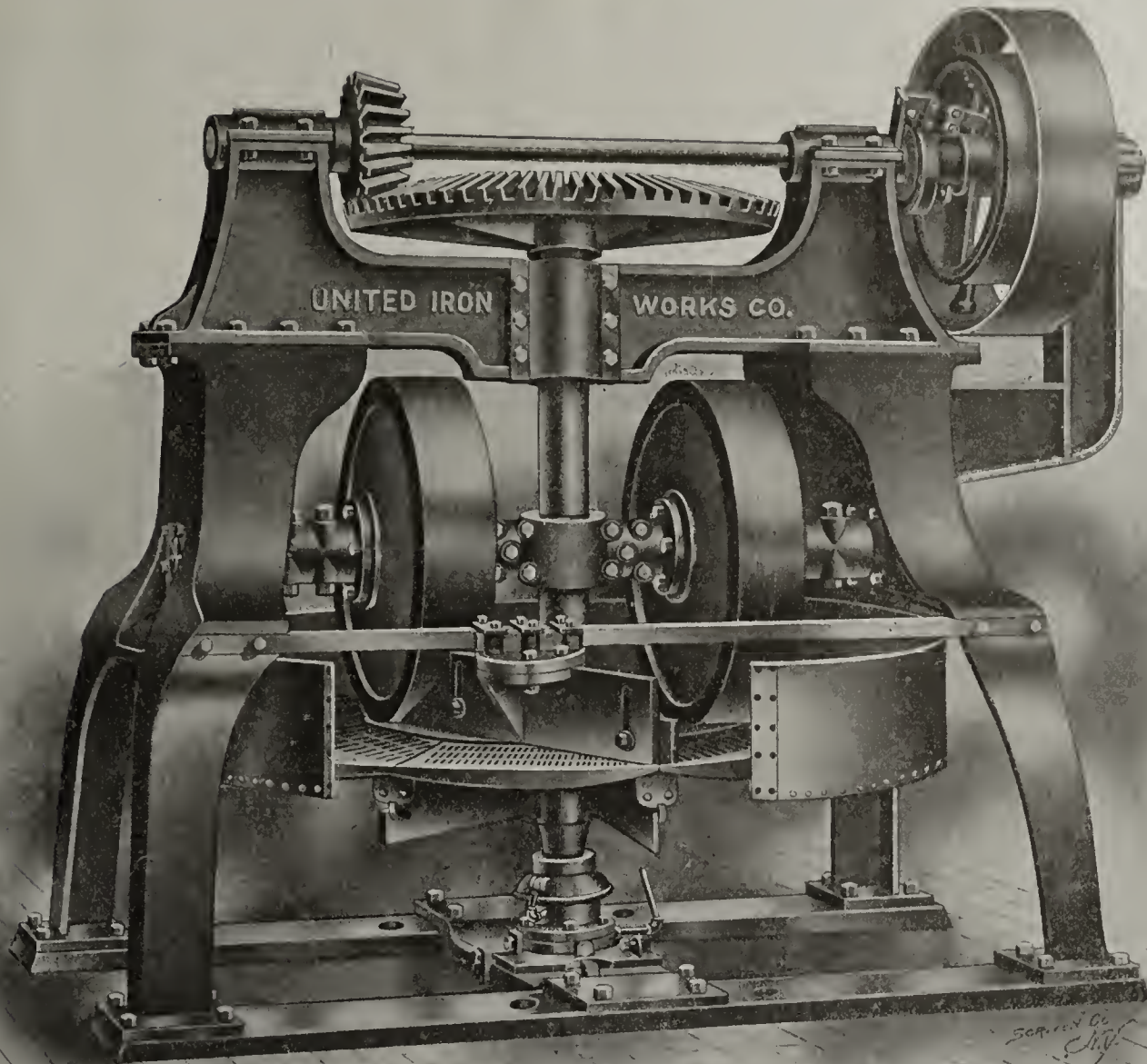
**"We
Fulfill
our
Guarantees."**



THE PREMIER BRICK MACHINE
and BENSING Automatic Side Cut BRICK CUTTER

We have a full line of Clay-Working Machinery, sand mold brick machines, auger brick and tile machines, Automatic side and end cut tables, dies, molds, barrows, trucks, sanders, represses, pug mills. *The only down cut, reel side brick cutter on the market for cutting face brick that do not require repressing.* We can guarantee to make you a better face brick with this cutter than you can get from any other cutter on the market.

B. E. LaDOW, - - Fredonia, Kansas.



**Here's What One of the Largest Cement Companies in the United States
Says About our "Pittsburg" Dry Pan:**

"Answering yours of the 19th instant; We are pleased to state that the dry pan which we purchased of you about a year ago has given entire satisfaction. We consider it one of the best, if not the best, dry pan manufactured and shall, indeed, be pleased to recommend it to prospective purchasers of such machinery.

Yours truly,

WESTERN STATES PORTLAND CEMENT CO."

And they Backed up their statement by ordering recently THREE MORE Pans from us

UNITED IRON WORKS COMPANY

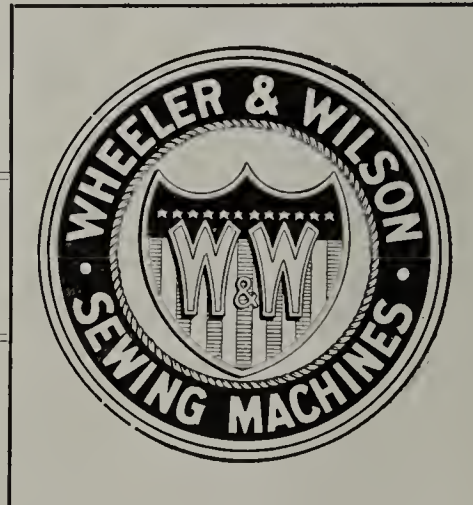
General Offices: SPRINGFIELD, MO.

SPRINGFIELD, MO.; AURORA, MO.; IOLA, KAS.; PITTSBURG, KAS.
CHERRYVALE, KAS.; KANSAS CITY, MO.

ALL OVER THE WORLD

THESE FAMILIAR SIGNS
MARK SINGER SHOPS

ALL OVER THE WORLD



THE ONLY SHOP WHERE
Singer & Wheeler & Wilson

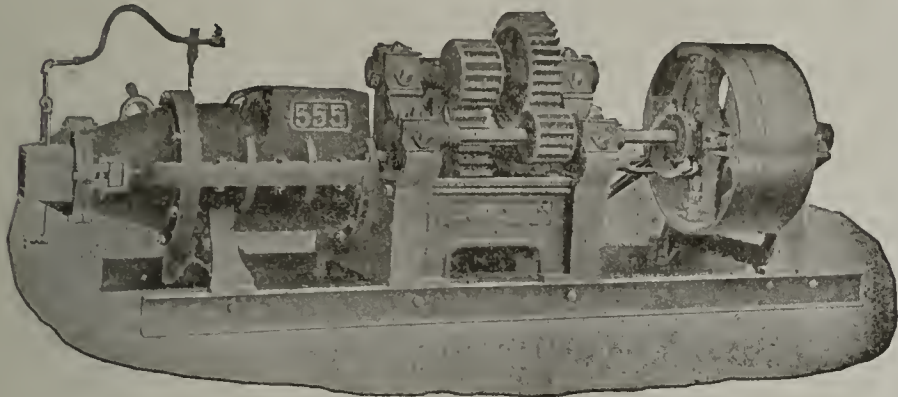
SEWING MACHINES ARE
SOLD RENTED OR EXCHANGED

SEE SINGER STORE

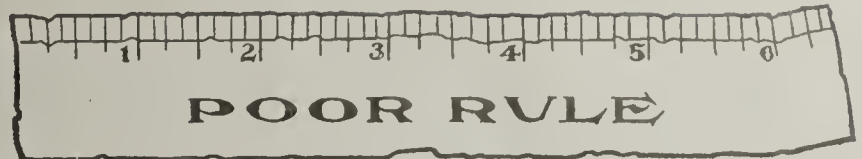
IN YOUR OWN CITY



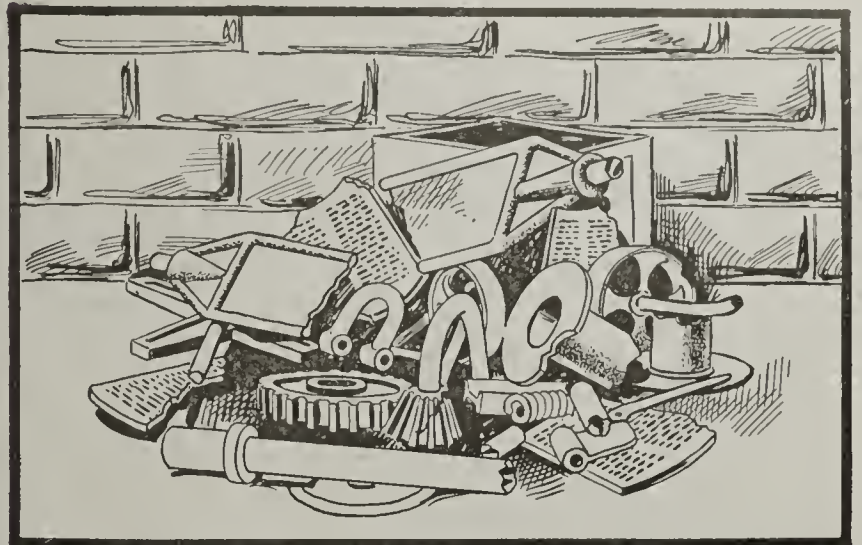
"RAYMOND'S"



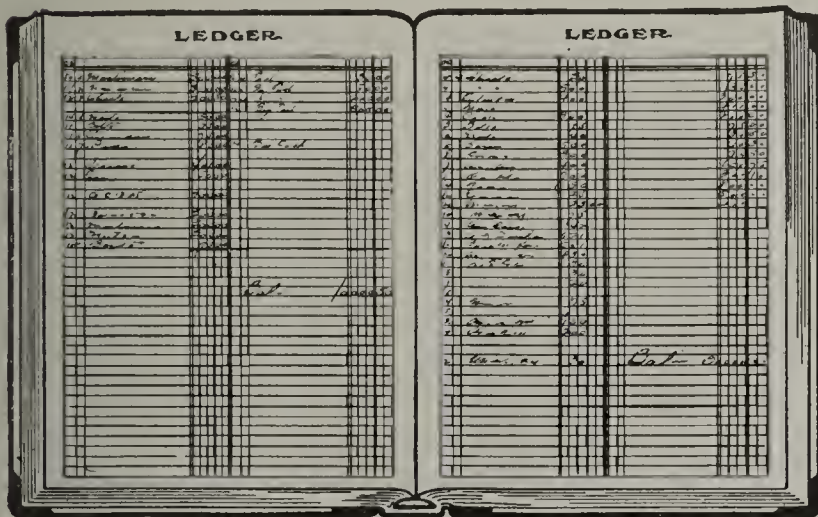
THE BEST



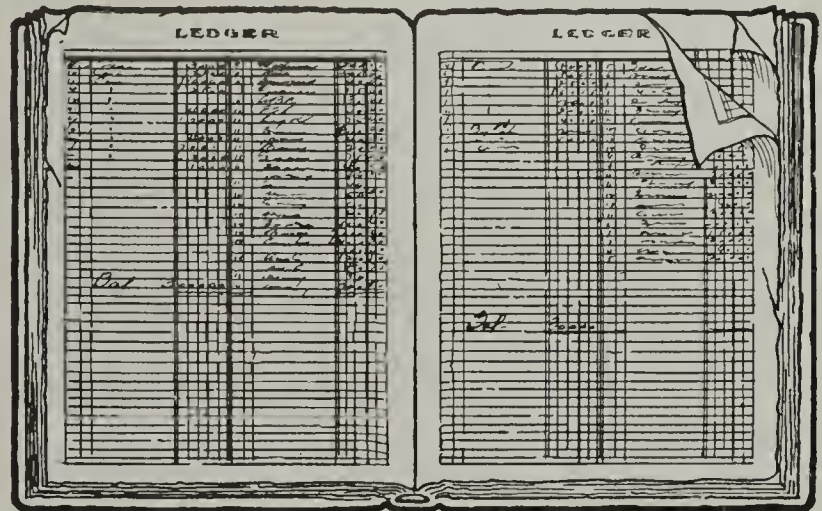
OTHERS



OTHERS



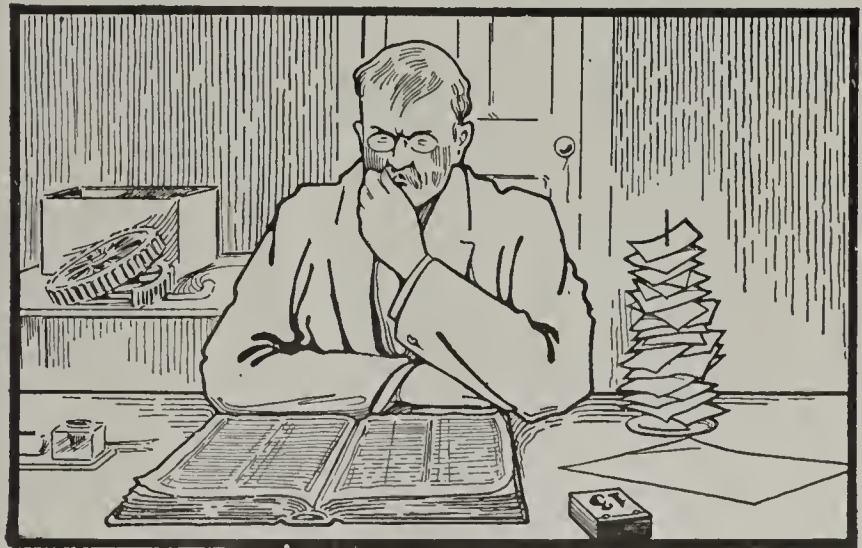
HANDSOME PROFITS



OTHERS



ENJOY LIFE



OTHERS

The C. W. RAYMOND CO.

DAYTON, OHIO, U. S. A.



Everything for the Brickmaker

Catalogue for the Asking

SAND-LIME BRICK MACHINERY

BOYD QUALITY

MODERN METHODS

✎

✎

✎

NO EXPERIMENTING

More Boyd Presses making sand-lime brick than any other press on the market. The Boyd Press is selected and purchased by those who want the best. Our "Special" Combination Block and Brick Press is the only successful machine in the world for making large building blocks and stones.

Sand-Lime Brick Plants designed and complete machinery equipment furnished, installed and set in operation. Machinery and product guaranteed.

Correspondence solicited.

CHISHOLM, BOYD & WHITE COMPANY

OFFICE AND WORKS, 57th AND WALLACE STREETS

CHICAGO

:

:

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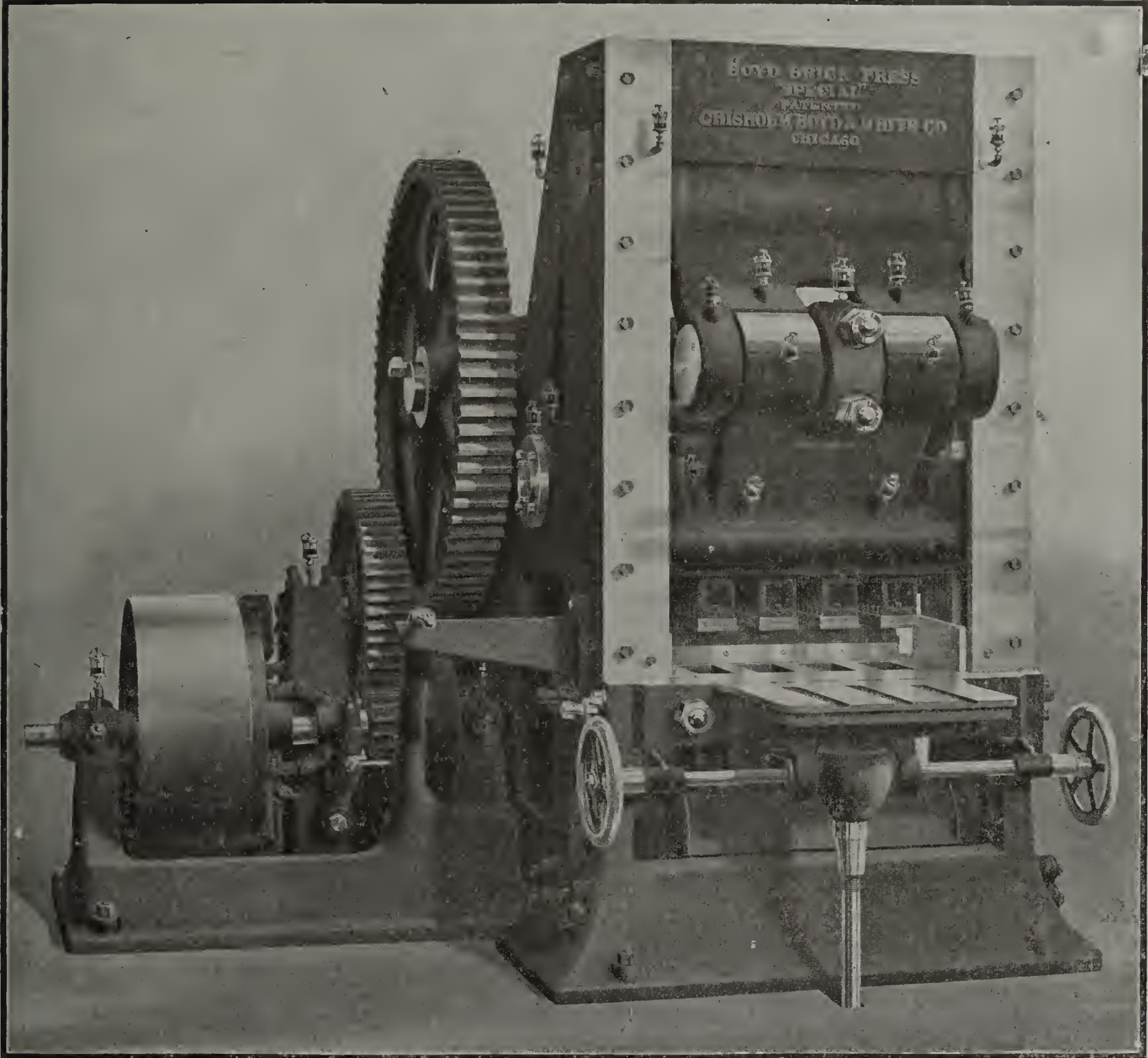
:

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ILLINOIS

THE BOYD BRICK PRESS

FOUR - MOLD "SPECIAL"



THE BOYD BRICK PRESS exerts greater pressure, holds it longer, puts more clay into brick, and makes stronger brick than any other Brick Press made. Especially adapted for working shales, and is the only successful machine for making fire brick.

ALL BOYD PRESSES are fitted with our IMPROVED PATENTED MOLD BOX, the liners of which are made of the hardest and toughest known metal, which can be reground at low cost when worn. The molds can be changed in a few minutes.

ITS RECORD: More Boyd Presses in actual operation than of all other Press Brick Machines combined. Write for Catalogue.

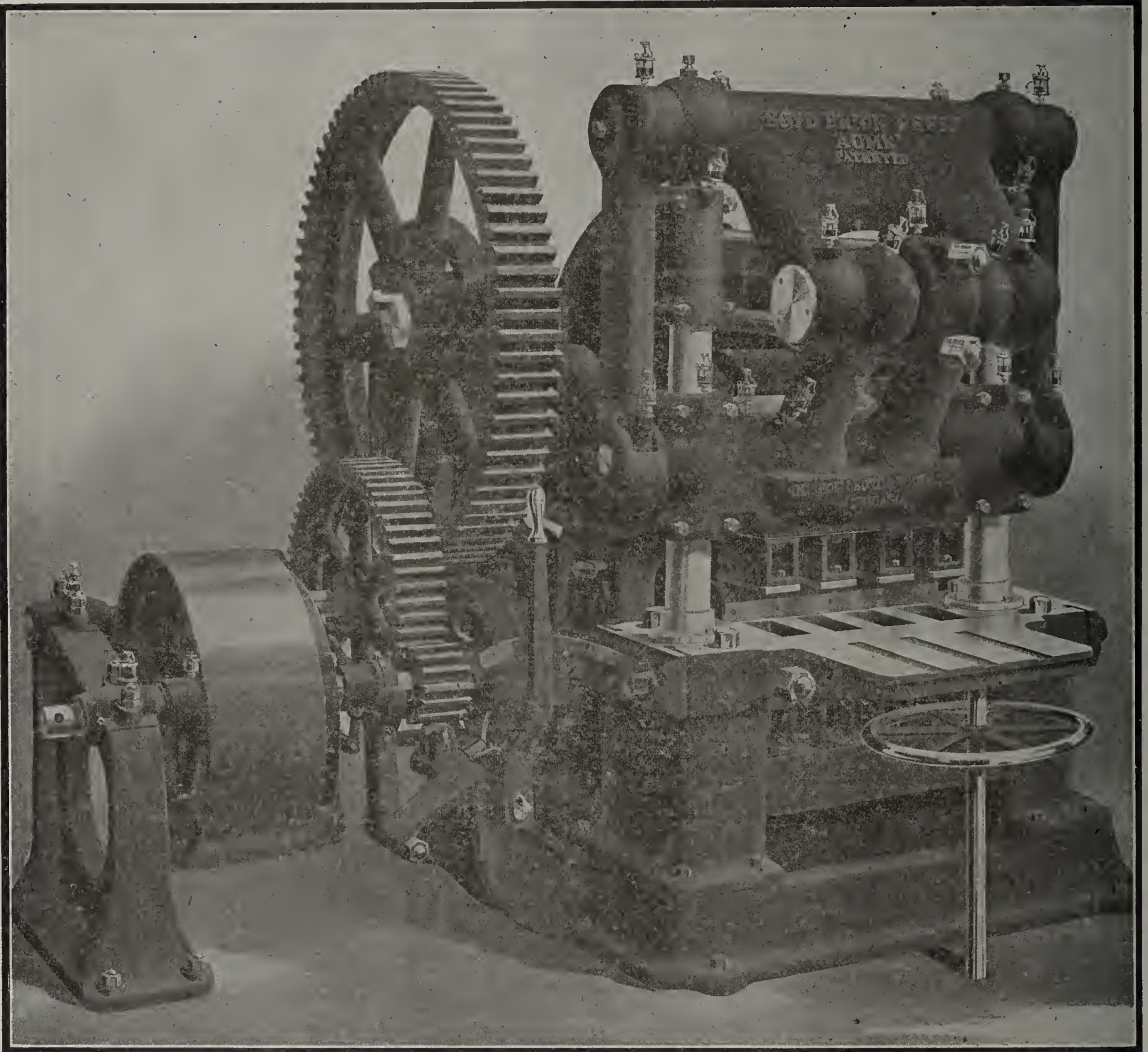
Chisholm, Boyd & White Co.,

OFFICE AND WORKS: 57th and WALLACE STREETS

Chicago, Illinois

THE BOYD BRICK PRESS

FOUR - MOLD "ACME"



IT'S NAME A GUARANTEE. The FOUR-MOLD PRESS above illustrated is our latest improved machine of this design. Over ONE HUNDRED now in use. Especially adapted for working shales.

A BUSINESS PROPOSITION

We will send to any responsible party a BOYD BRICK PRESS ON TRIAL and subject to purchase after the making and burning of one or more kilns of brick. We take the machine back if not satisfactory. We design and equip brick plants complete. Correspondence Solicited.

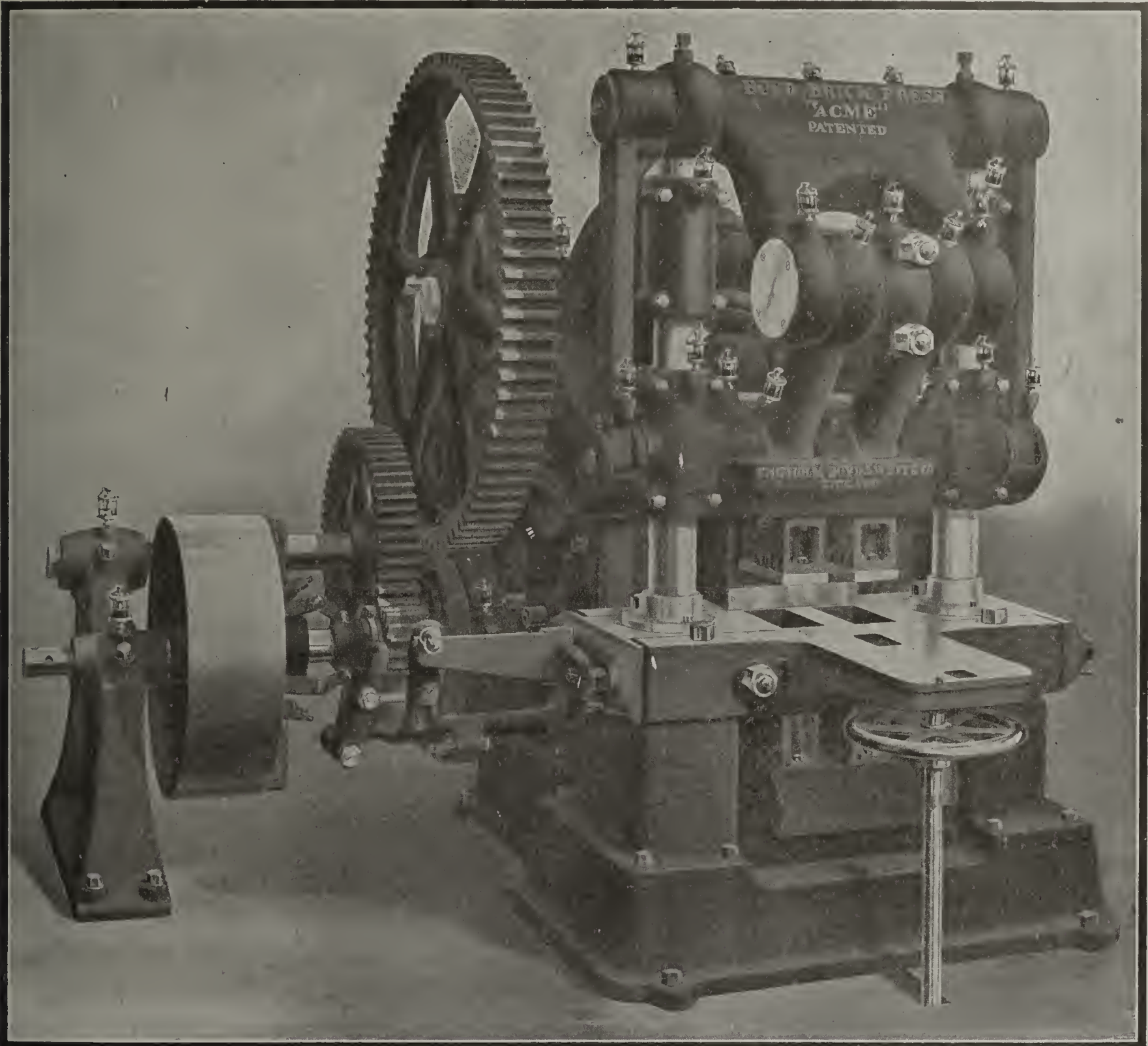
Chisholm, Boyd & White Co.

OFFICE AND WORKS: 57th and WALLACE STREETS

Chicago, Illinois

THE BOYD BRICK PRESS

TWO - MOLD "ACME"



The Two-MOLD PRESS above illustrated, is especially adapted for Brick Plants of small capacity, and for making ornamental and shape bricks it has no superior. It has never failed to give entire satisfaction, and is guaranteed for two years against breakage.

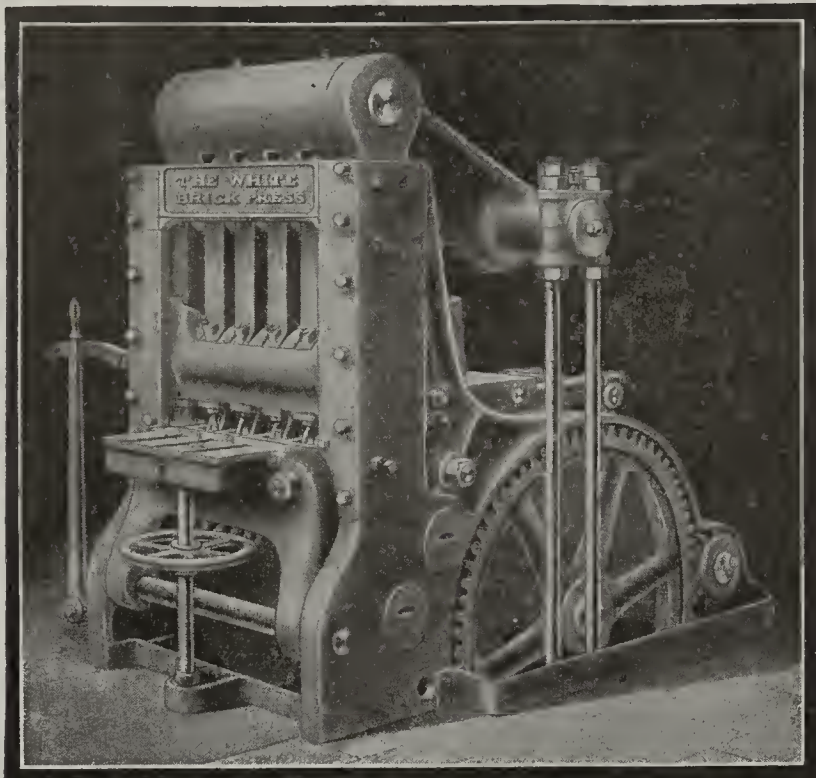
BRICK PRESSES are too costly for any one to experiment with. SEVENTEEN YEARS of practical experience back of each Boyd Press.

CONSIDER THIS: Your Brick Plant may be properly constructed, well located, with an abundance of good clay or shale, and a good market at your door; but unless your Brick Press is always ready for a day's work you will not get proper returns from your investment.

Chisholm, Boyd & White Co.

OFFICE AND WORKS: 57th and WALLACE STREETS

Chicago, Illinois



New White Press

Especially designed for making Sand-Lime Brick. Strongest, Most Powerful, Most Durable, and Most Convenient. Molds removable; can be changed in seven minutes.

Send for Special Press Catalogue.

SAND-LIME BRICK

Complete Plants installed, started and operated until the first 100,000 brick are made. No risks, delays or expensive experimenting.

Strongest possible guarantees. This is the *Only Safe Method* for parties going into any new industry.



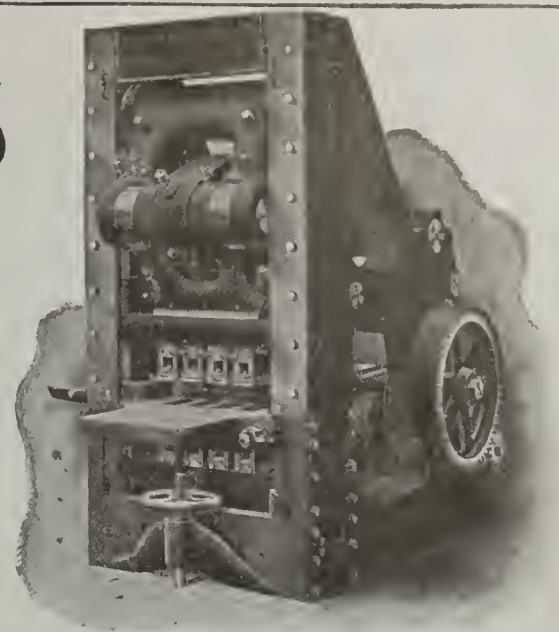
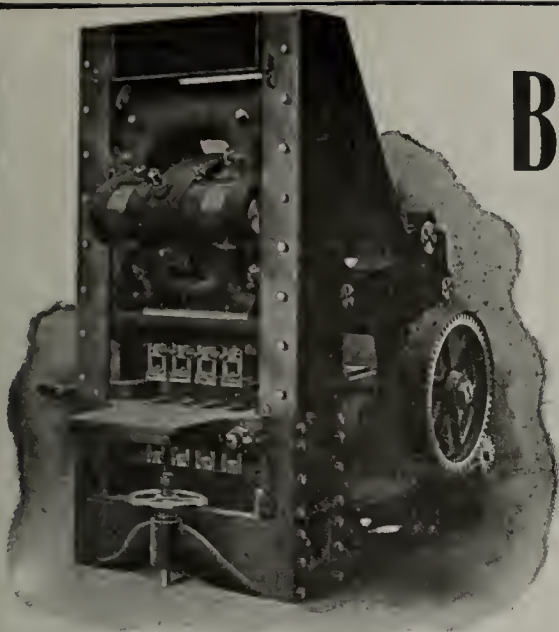
Our Latest
Illustrated Booklet
gives all details.
Mailed Free.

AMERICAN SAND-LIME BRICK CO.

1308 GREAT NORTHERN BLDG., CHICAGO

BERG BRICK PRESS

The highest development of the Art of Brickmaking Machinery so pronounced by the United States Government.



The BERG for the highest grade of pressed brick of shale or clay. It makes all kinds of shapes and sizes of brick. Changes from one shape to another can be made in less than an hour's time.

First-Class Workmanship. Cut Gearing. Fully Warranted.

The BERG makes the best sand-lime brick and cheapest because it is the strongest machine and gives the highest pressure. Thirty-five sand-lime plants in United States use the BERG Brick Press SUCCESSFULLY.

The BERG MAKES the highest grade of fire brick. Can make all kinds of shapes desired for fire-brick purposes.

Three distinct pressures make the brick evenly pressed all through. No granulated centers of the brick.

The BERG is the best for sand and cement because of its strong pressure.

Uses less cement, makes cheaper brick.

The 1905 Berg Press

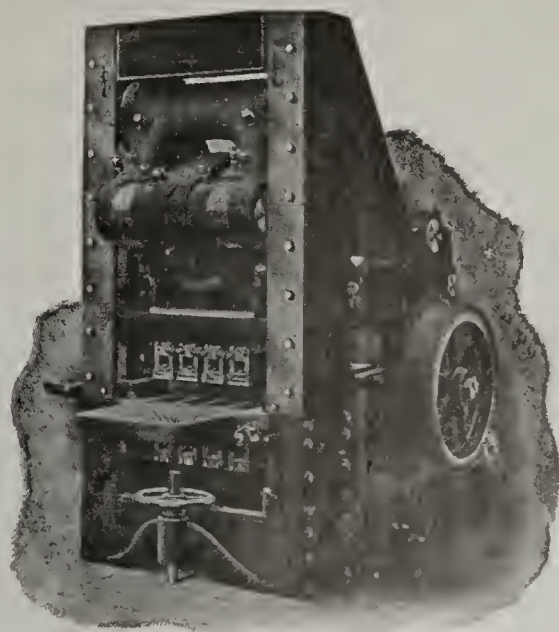
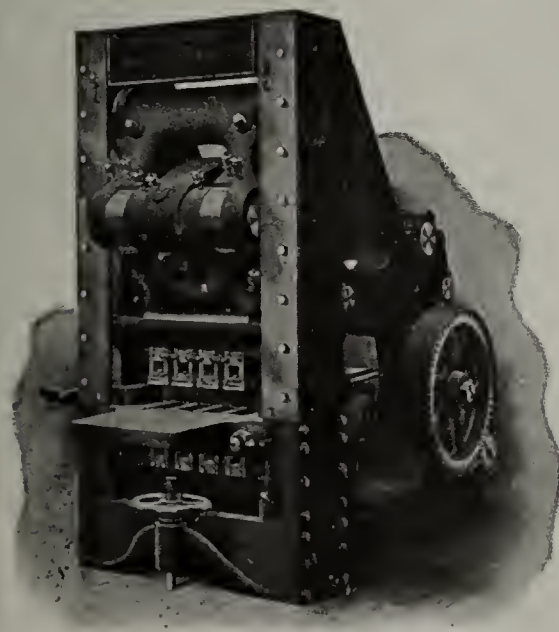
Many other steps further forward in improvement and highest grade of material and workmanship, also cut gearing. Fully guaranteed as to its success. Manufactured by its inventor in Toronto, Canada, exclusively. Plans and specifications on the different kinds of plants furnished, also all equipments.

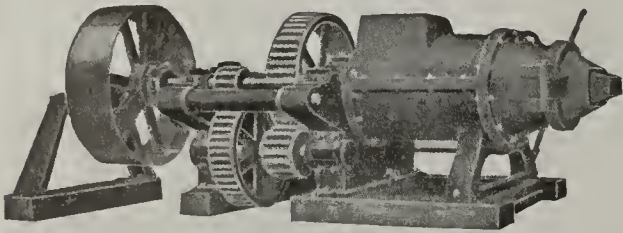
For prices and full particulars, address

A. BERG & SONS

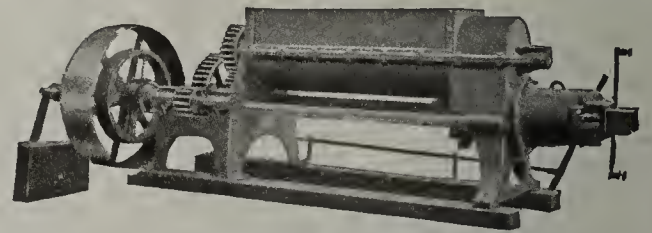
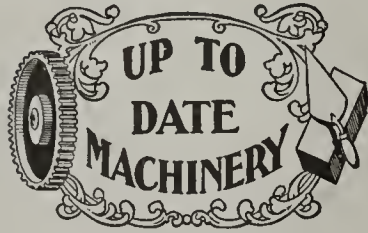
OFFICE: MANNING CHAMBERS

TORONTO, ONT., CANADA





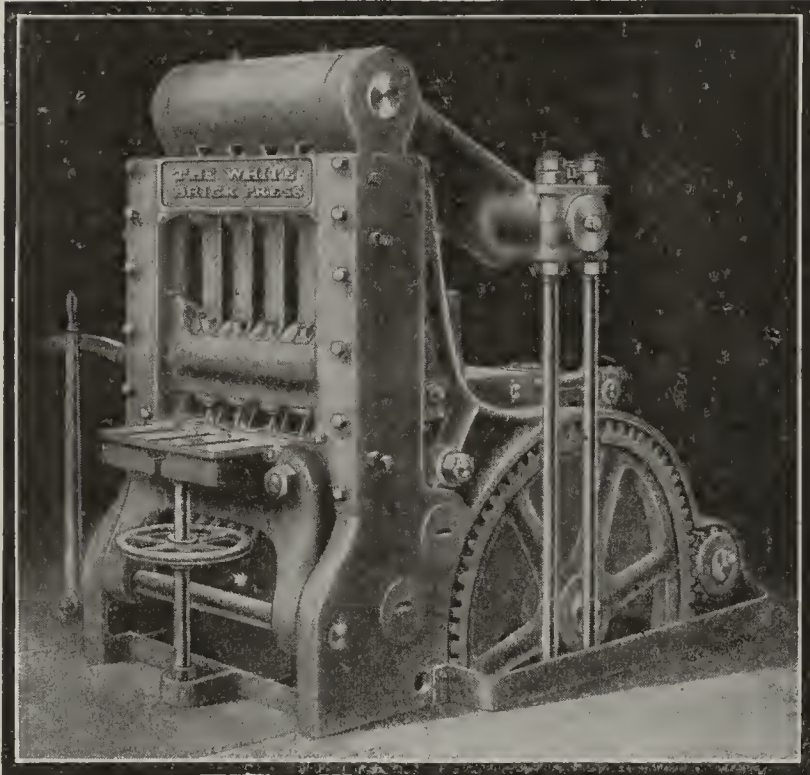
Auger Machine



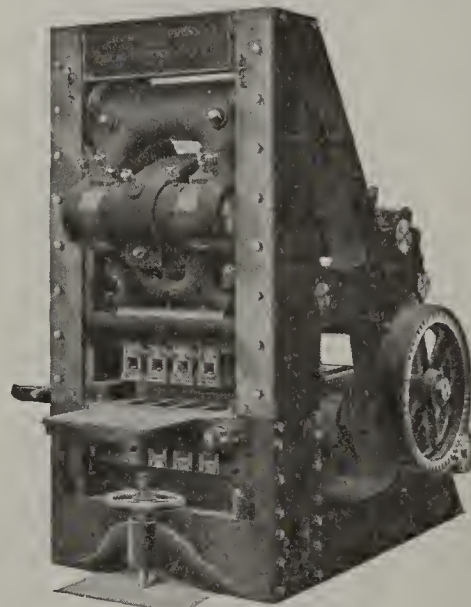
Combination Machine

UP=TO=DATE MACHINERY

For Making all Kinds of Brick—
Dry Pressed, Wire Cut,
Sand Moulded



New White Press



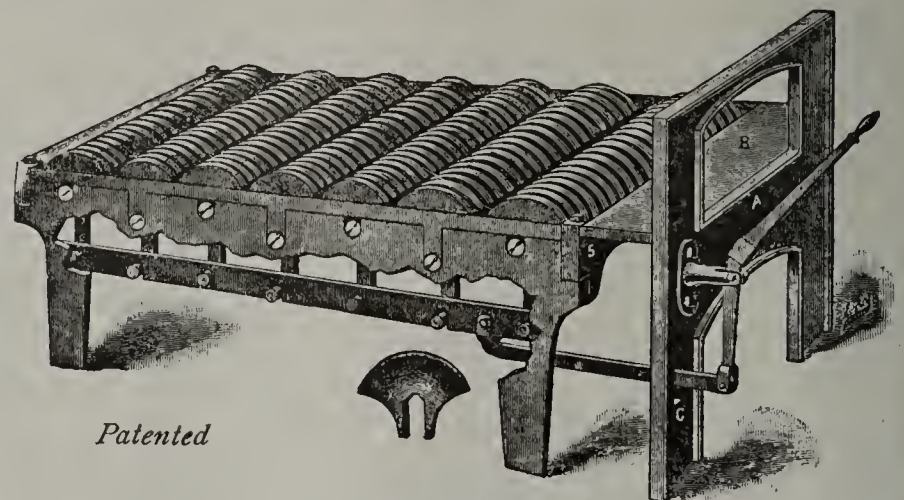
New Model Berg Press

Full
Line of
Brickyard
Specialties
and
Supplies

In addition to our well known BERG PRESS, we are now bringing out our new WHITE PRESS for clay-brick work. It is especially recommended for difficult and refractory clay. By far the most powerful press built. Removable molds, changed in SEVEN minutes. Special catalogue and full particulars on application.

Something New for 1907

Rocking and Dumping Grates for Kilns. Save coal, save labor, and do away with checked brick. Send for "Lecture on Combustion," by His Satanic Majesty.



Patented

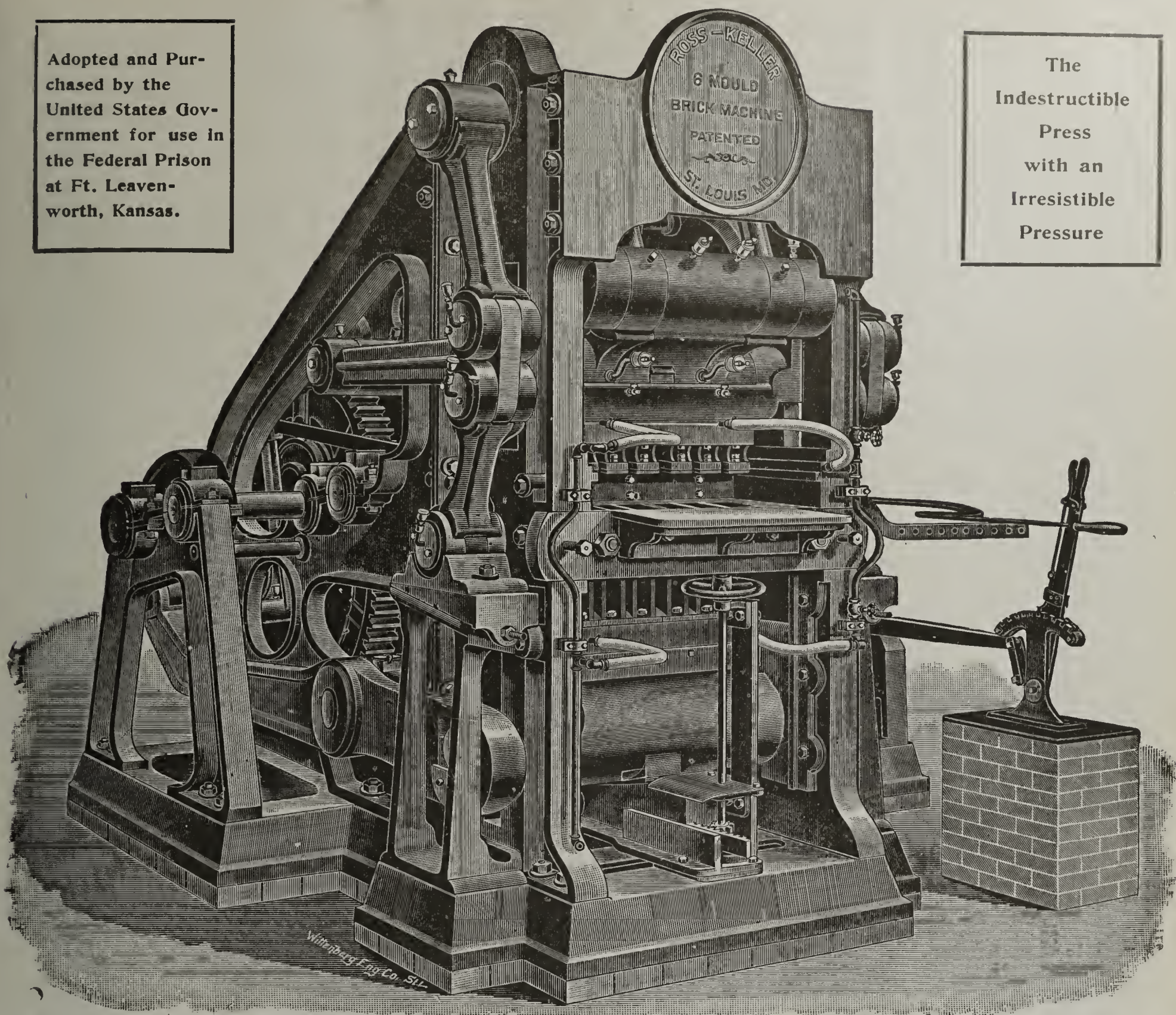
U. S. SELF CLEANING GRATE
In position ready for use. Part of frame cut away to show connection below.

Chicago Brick Machinery Co.

1308 Great Northern Bldg.

Adopted and Purchased by the United States Government for use in the Federal Prison at Ft. Leavenworth, Kansas.

The Indestructible Press with an Irresistible Pressure



WE BUILD

Sand-Lime Brick Plants, Shale and Clay Brick Plants

ARE ALSO SOLE MANUFACTURERS OF THE

Ross-Keller Triple Pressure Brick Press

The strongest and most efficient Brick Machine made, and the only Press that gives three distinct pressures to the brick

ROSS-KELLER TRIPLE PRESSURE BRICK MACHINE CO.

OFFICES FULLERTON BUILDING,

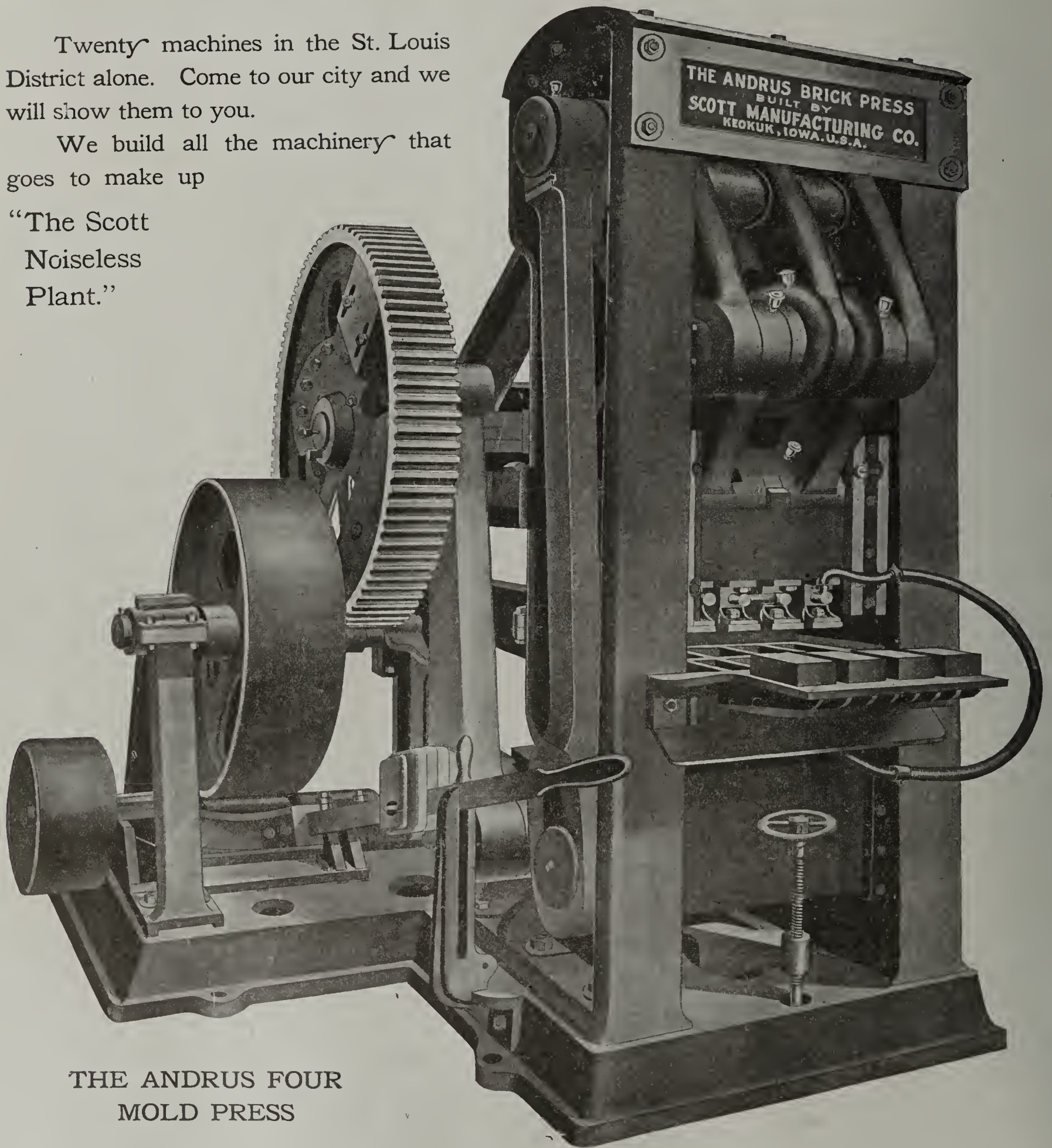
ST. LOUIS, MO.

This is the Press That Scott Builds

Twenty machines in the St. Louis District alone. Come to our city and we will show them to you.

We build all the machinery that goes to make up

"The Scott
Noiseless
Plant."



THE ANDRUS FOUR
MOLD PRESS

SCOTT MANUFACTURING CO.

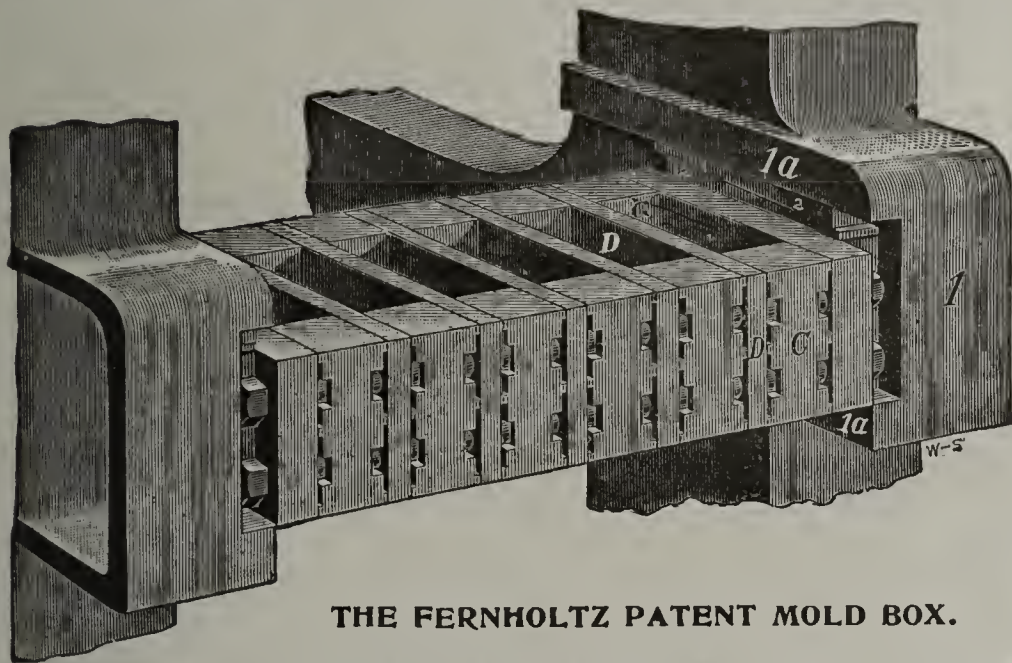
602 Commonwealth Trust Building :: St. Louis, Mo.

The Fernholtz Brick Machinery Co.

Manufacturers of

The Celebrated Fernholtz Dry Press

Four mold Press 20,000 daily capacity. Six mold Press 30,000 daily capacity

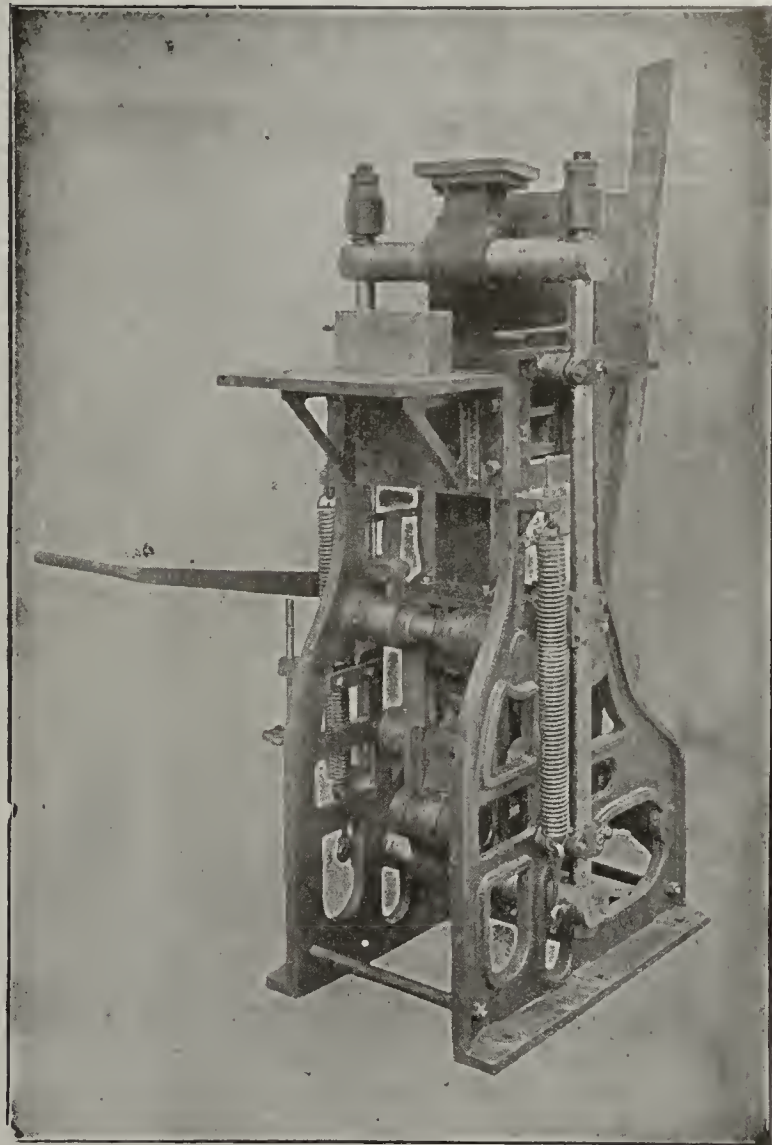


THE FERNHOLTZ PATENT MOLD BOX.

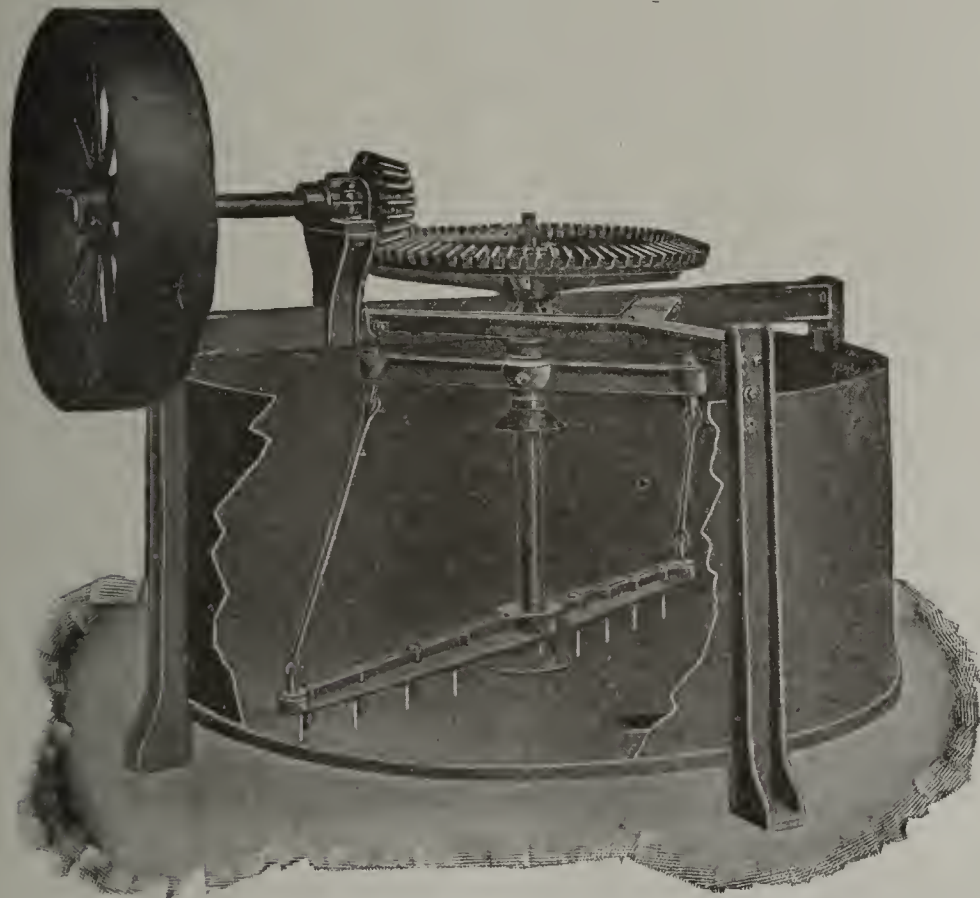
No old style Liners. The Blocks are adjustable and molds are always one size. We have put them in most all makes of Dry Press machines. Easily and quickly adjusted. They are made entirely out of chilled iron, the hardest known metal.

GRATH PATENT HAND POWER PRESS.

Especially adapted for ornamental designs. Any size brick up to 12 $\frac{5}{8}$ inches long, 10 inches wide and 4 $\frac{1}{4}$ inches thick. Brick set into kiln direct from press.



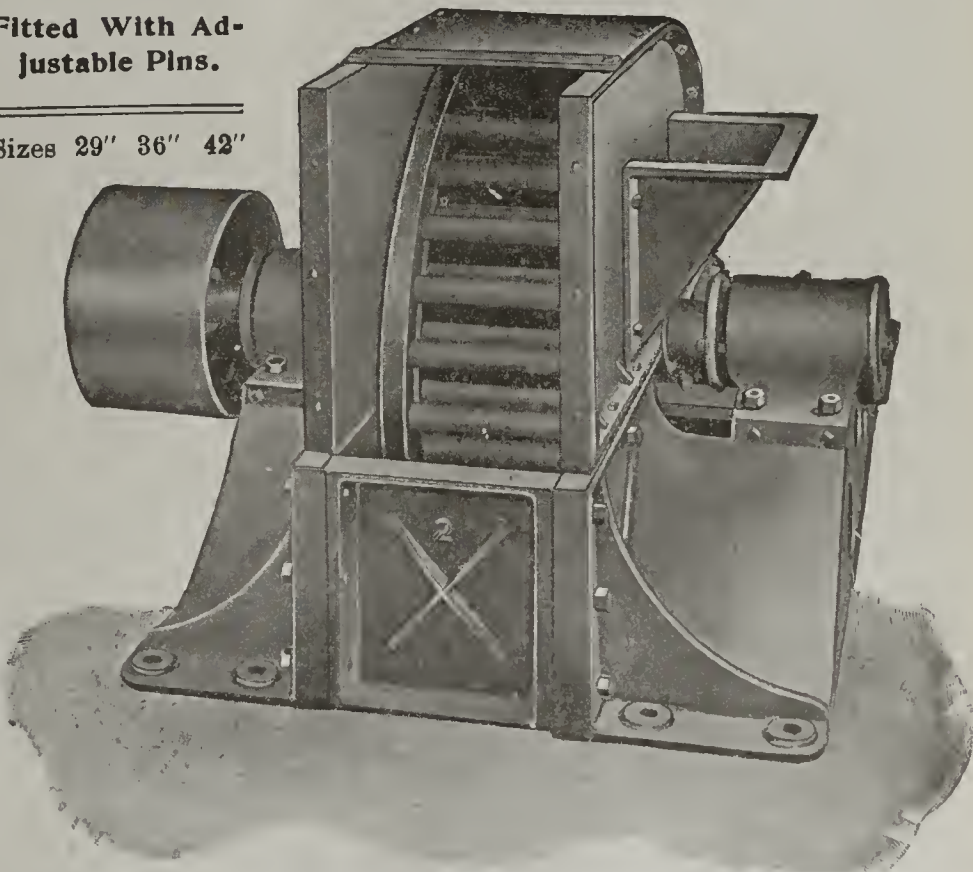
GRATH PATENT HAND POWER PRESS.



A GOOD MIXER IS ALWAYS APPRECIATED.

Fitted With Adjustable Pins.

Sizes 29" 36" 42"



THE FERNHOLTZ CLAY PULVERIZER.

The Fernholtz Brick Machinery Co.

Cable Address "Fernbrick." Western Union Code.

Boyle Avenue and Old Manchester Road, ST. LOUIS, MO., U. S. A.

DRY PRESS BRICK MACHINES

RELIANCE DRY PRESS THE MACHINE OF THE FUTURE



OLD STYLE TOGGLE MOVEMENTS SUPERCEDED BY NEW
—AND BETTER PRINCIPLES—

THE ONLY MACHINE not using the Toggle Movement.

THE ONLY MACHINE applying Pressure from the Bottom.

THE ONLY MACHINE making a Uniformly Pressed Brick.

THE ONLY MACHINE MAKING BRICK WITHOUT GRANULATED CENTERS.

Every Brick is a Face Brick. 4 Mold Press 20000 per day. 6 Mold Press 30000 per day. Adjustment permits any pressure desired (A Feature peculiar to the *Reliance*.) Cheapest because having fewest parts. (Also cheapest to keep in repair.)

S I M P L E
S T R O N G
E F F I C I E N T

WRITE TO-DAY FOR PARTICULARS.

SEND US A SAMPLE OF YOUR CLAY.

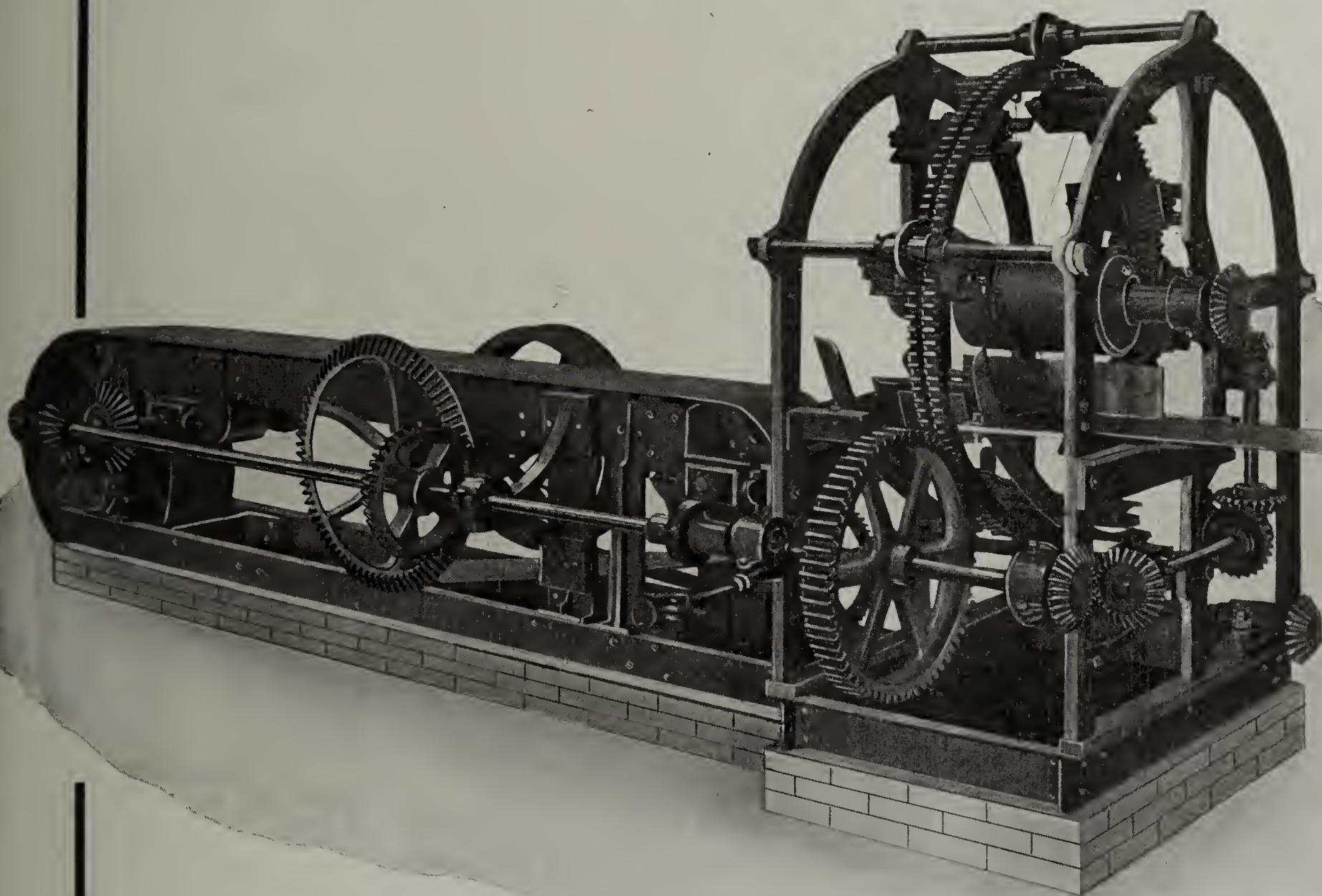
ADDRESS

THE RELIANCE MACHINE AND TOOL WORKS
ST. LOUIS, MO.

ARE YOU INTERESTED IN A CUTTER THAT WILL DOUBLE YOUR PROFITS FOR 1907?

The Hix "Happy Thought" Automatic Cutter will do it. This Cutter is without an equal as it does what others can not do. Will cut end or side cut brick, hollow blocks or conduits any length or size desired. The capacity is unlimited. No clay wasted, every brick a perfect one, no complicated machinery to get out of order and give annoyance.

It Will Pay You to Write Us for Particulars

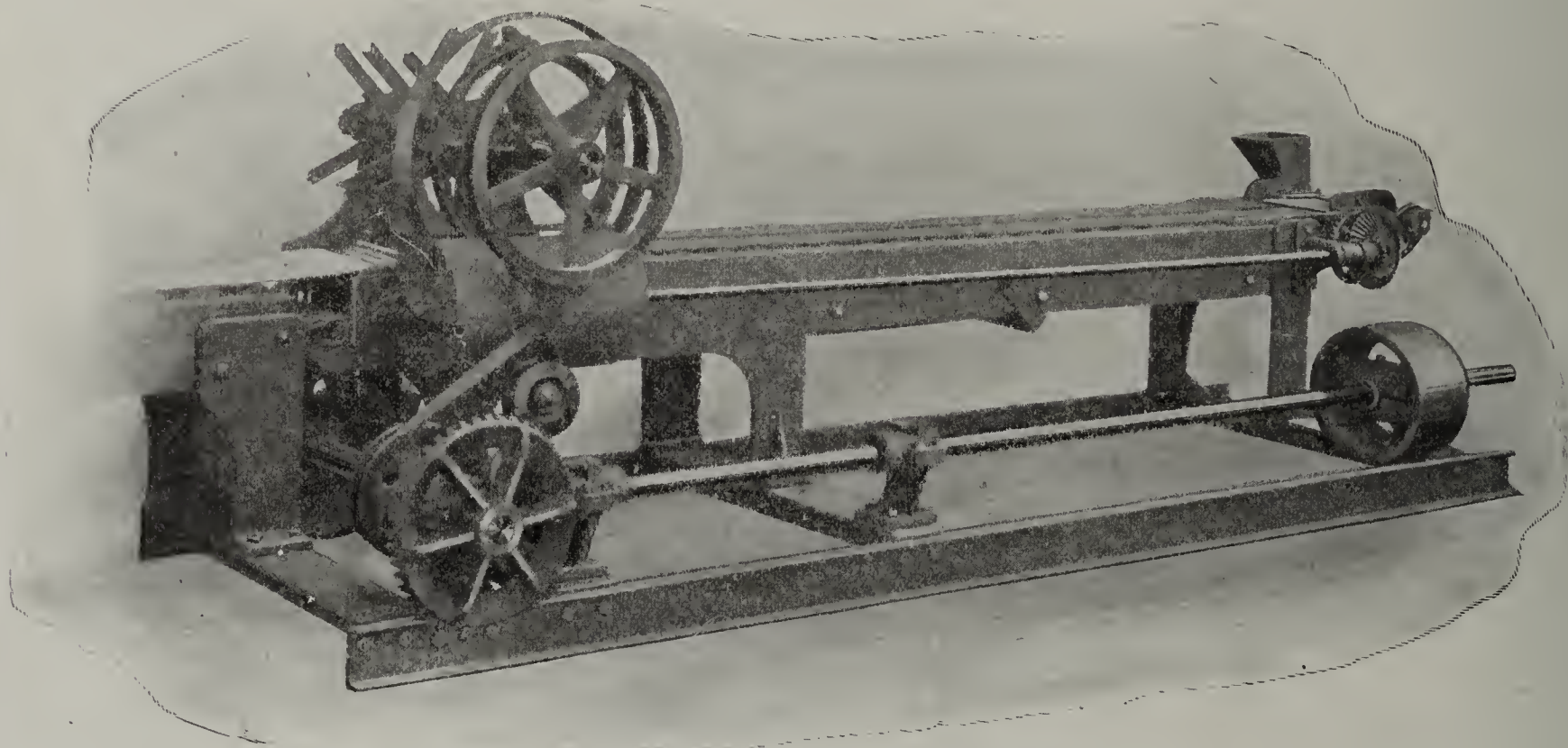


THE HIX "HAPPY THOUGHT" AUTOMATIC SIDE CUT BRICK CUTTER.

The Wallace Manufacturing Company
FRANKFORT, IND., U. S. A.

BRICK CUTTERS

**AUTOMATIC MACHINES *FOR*
LARGE OR SMALL OUTPUT
OF EITHER SIDE-CUT OR
END-CUT BRICK. GOOD CON-
STRUCTION, SIMPLE DESIGN,
*EXCELLENT SERVICE***



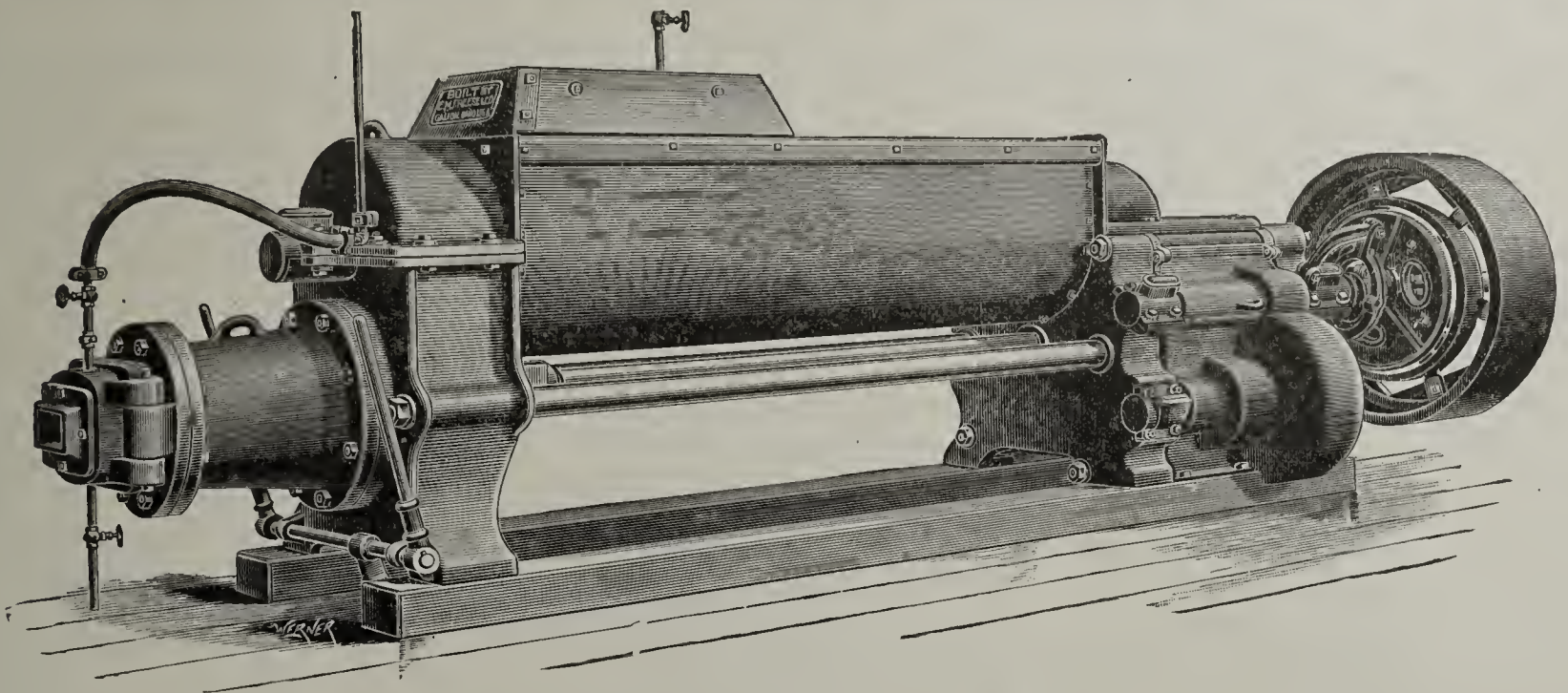
THE BREWER No. 14

is a new pattern of Automatic Cutting Machine for end-cut brick. It has a novel and original cam movement which is simplicity itself. Takes up its own wear, needs no adjustment. Ask for complete description and specifications.

H. BREWER & CO. ***TÉCUMSEH***
MICHIGAN

DESIGNERS AND BUILDERS OF CLAY WORKING MACHINES

UNION BRICK MACHINES



We build these Machines in five sizes. Capacities to 10,000 brick per hour.

Several hundred are in everyday use. They do first-class work and are convenient, economical and durable. This can be verified by investigation.

We also build Brick Machines with separate Pug Mill.

Don't forget our Automatic Cutters. They give satisfaction.

State your requirements and let us furnish particulars.

E. M. FREESE & CO.

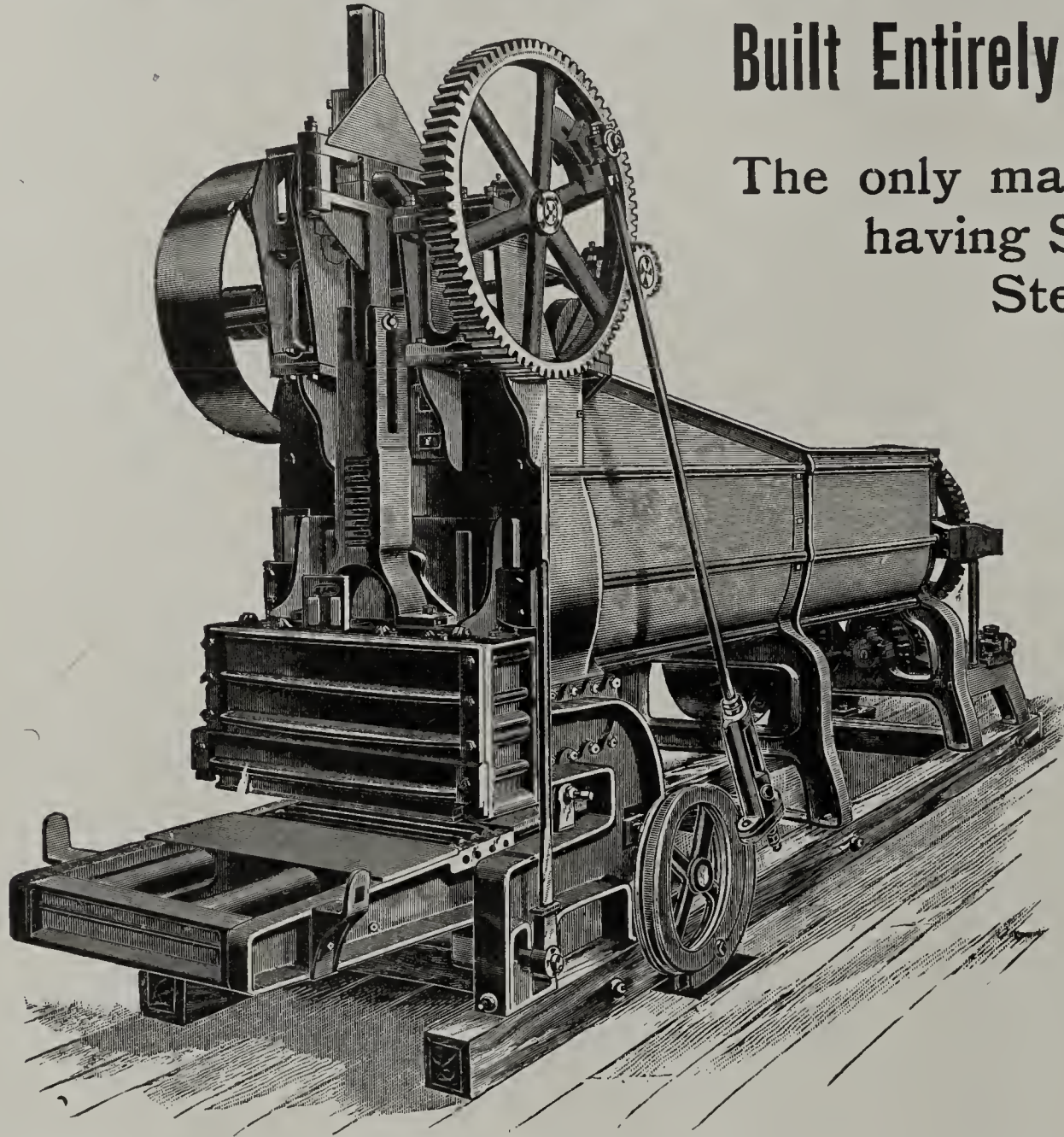
GALION

OHIO

THE POTTS HORIZONTAL BRICK MACHINE

Built Entirely of Iron and Steel.

The only machine of this class
having Steel Gear and
Steel Shaft.

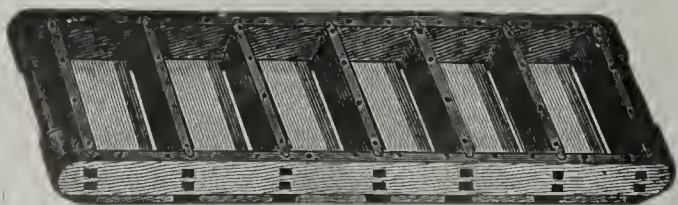


Built of the Best
Material by the Best
Workmen.

Simple, Strong and
Durable.

No extra pug mill required to enable working the clay direct from the bank. Its great strength enables working the clay as stiff as practicable, insuring brick which will be **STRAIGHT** and **SQUARE**.

THE LEADER OF ALL SAND MOULD MACHINES.



BRICK MOULDS A SPECIALTY
QUALITY IS OUR AIM.

We manufacture a complete line of Brick Yard Supplies. Write for prices.

C. & A. POTTS & CO., Indianapolis, Ind.

BRICK DRYERS

The largest and best. The drying done upon an entirely new principle. Brick made today. Set in Kiln tomorrow. Thoroughly dry. Will dry the most tender clay with no loss from cracking.

It has **No cars** .

No transfer cars

No rail

No ties

No fans

No extra engine

No high or expensive stack

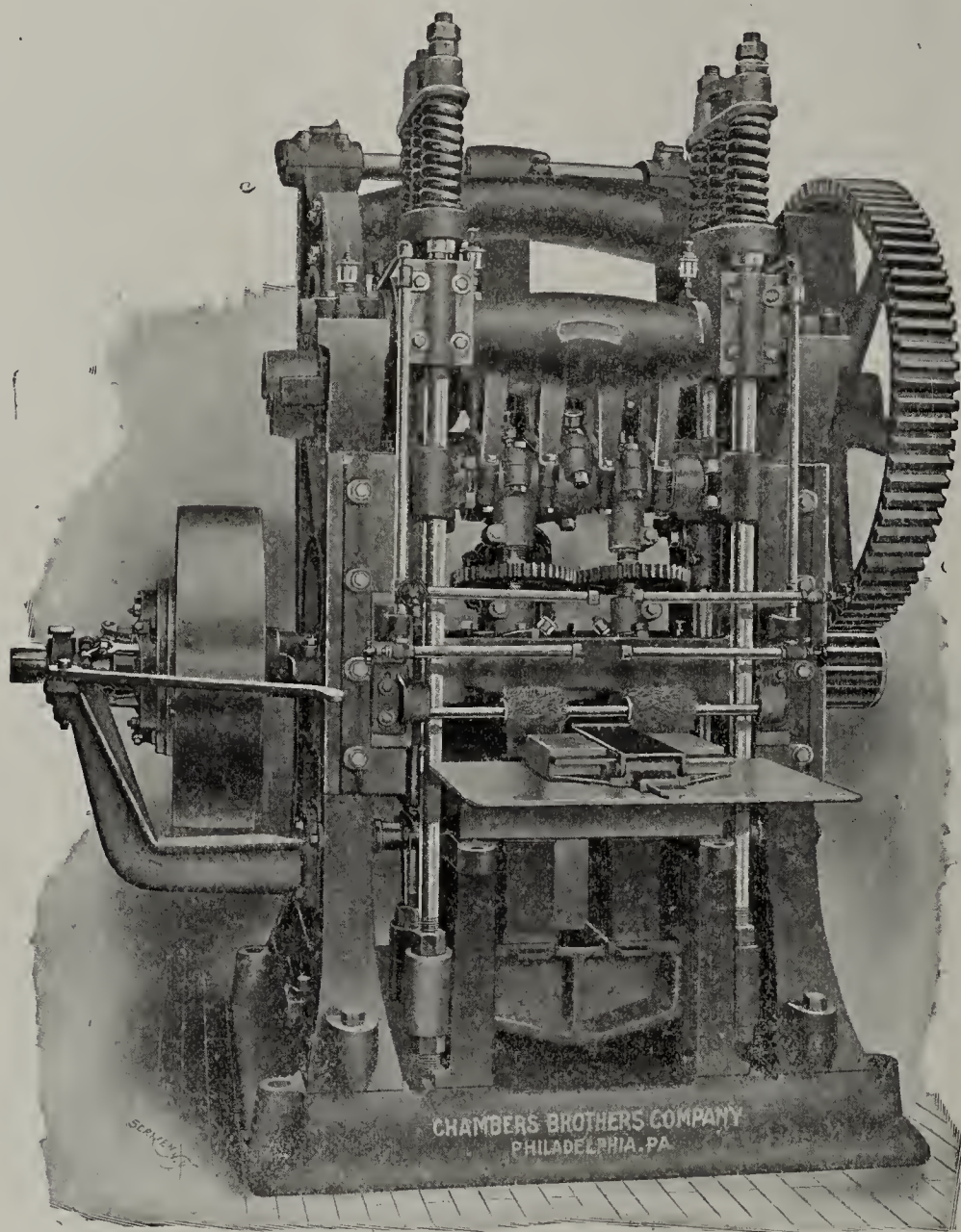
The best dryer on the market. Manufactured by

C. & A. POTTS & CO.

INDIANAPOLIS, IND.

MACHINERY FOR BUILDING BRICK AND FOR STREET PAVERS

Weight
 about
 11,000 pounds
 Capacity
 2,000 bricks
 per hour.



Single Crank
 Movement
 Working
 Machinery
 all above the
 Mold Box.

THE PHILADELPHIA REPRESS.

Automatic End Cut Brick Machines of five sizes, having capacity
 from 10,000 to over 100,00 brick daily under
 favorable conditions.

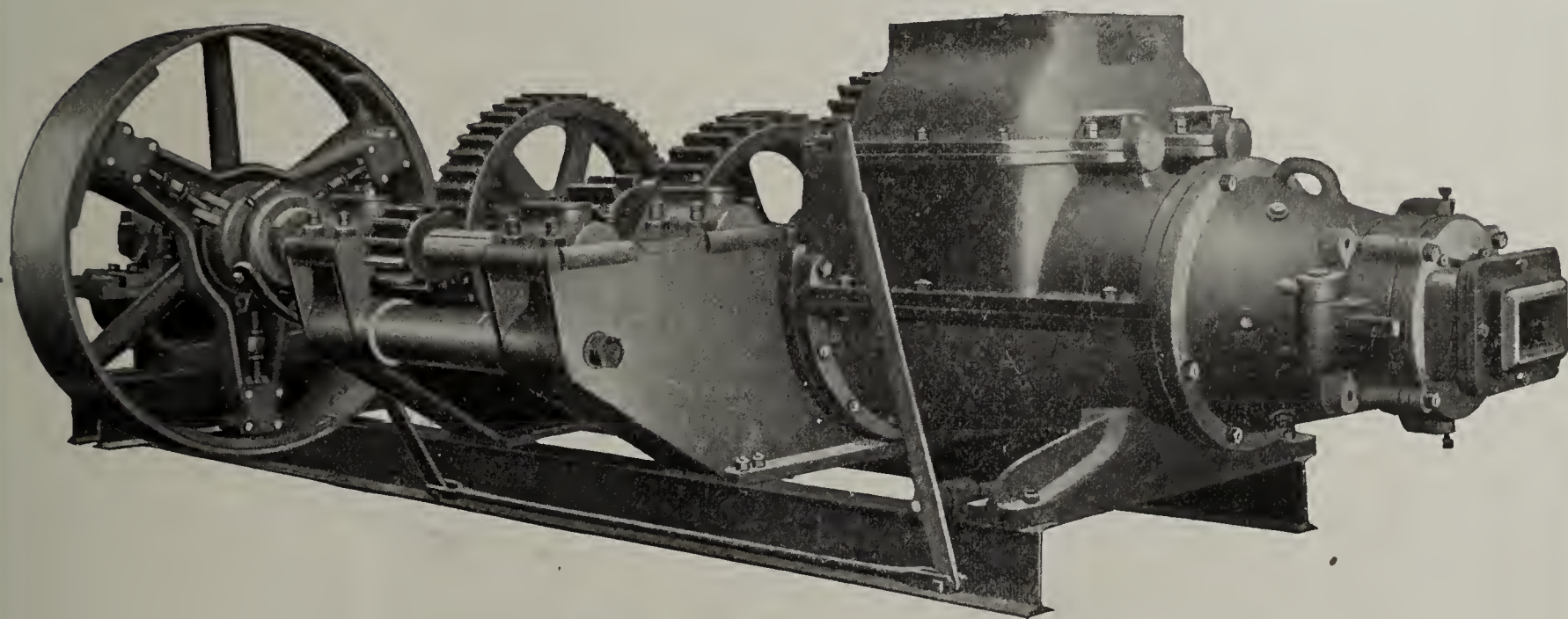
CHAMBERS BROTHERS COMPANY

52D AND MEDIA STREETS

E. R. FRAZIER, Chicago Agent,
 59 West Jackson Boulevard.

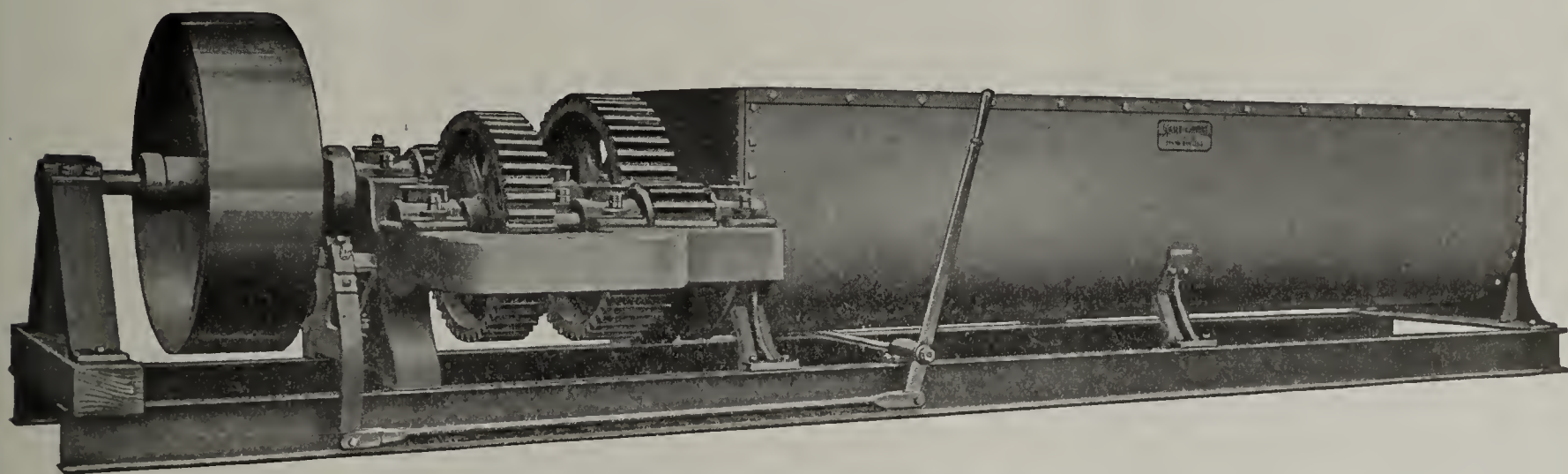
PHILADELPHIA, PA.

Modern Brick Machinery



NO. 9 AUGER BRICK MACHINE

Capacity 50,000 to 70,000. The Machine for Difficult Clays. Heavy Shafts - Steel Gears - Accessibility



12 Ft DOUBLE GEARED PUG MILL TYPE "C"

Heavy Shafts and Large Faced Gears

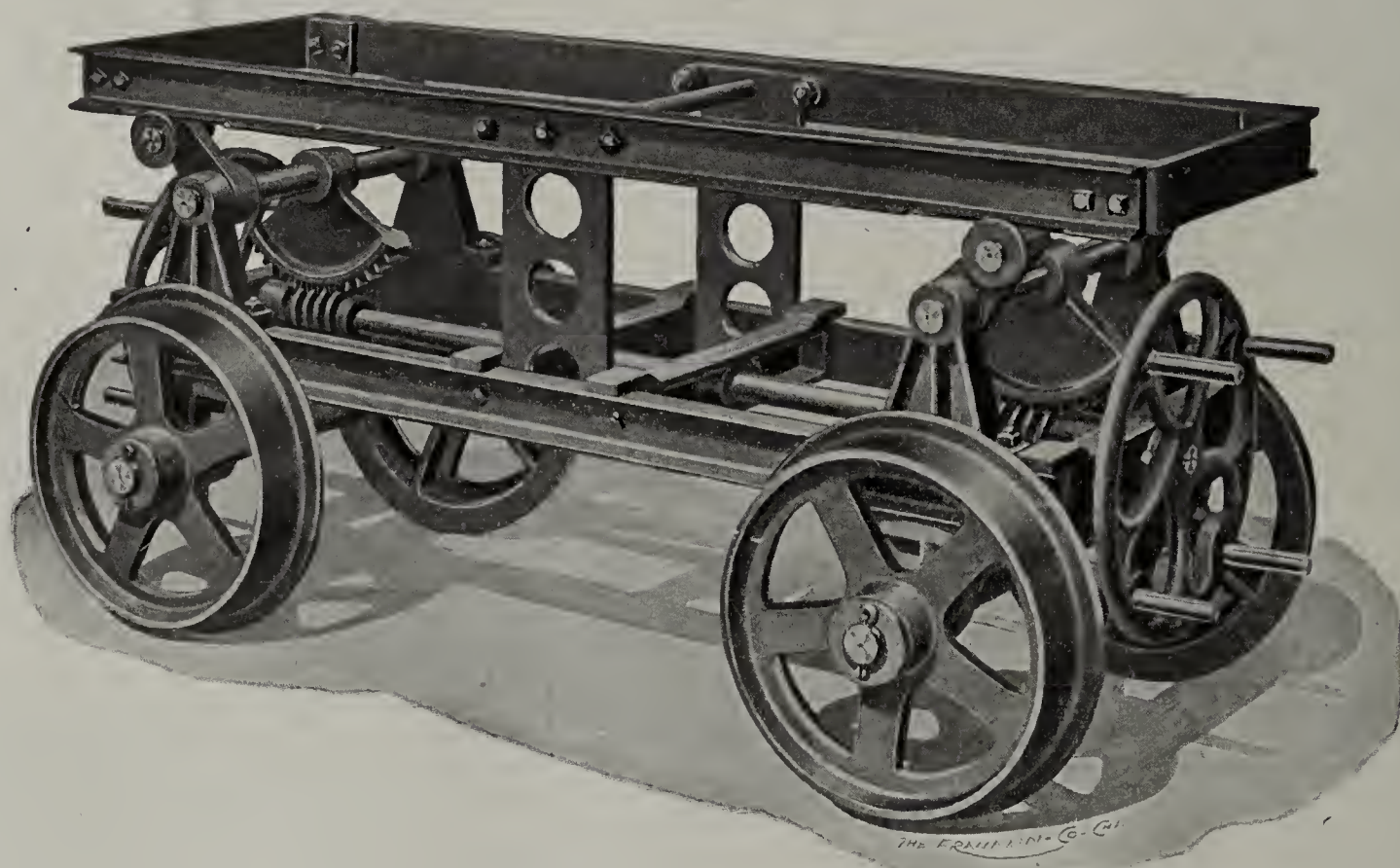
Write for Our new Circular No. 12 describing some new Models of Brick Machinery

The **BONNOT COMPANY**
CANTON, OHIO

THE GUILDER

ELEVATING and LOWERING BRICK CAR

FOR OPEN AIR SYSTEM OF DRYING



Strong and servicable. Easy to handle. Operated from either end. All iron and steel. Raised and lowered by worm gear and segment. The most perfect car of its kind made. We will furnish the **Guilder Elevating and Lowering Car** with the necessary transfer cars and turn table at a reasonable price and send you all the plans for an open air system of drying without additional cost.

Write us in regard to this car and also let us tell you all about the "**PREMIER**" line of Clay-Working Machinery.

The J. D. Fate Company

PLYMOUTH, OHIO



Vol. XXX. No. 4.

CHICAGO, FEBRUARY 28, 1907.

Semi-Monthly, \$1.00 per Year
Single Copies, - 10 Cent.

**A REPORT OF THE TWENTY-NINTH ANNUAL
MEETING OF THE ILLINOIS CLAY WORK-
ERS ASSOCIATION.**

THIRD SESSION.

President John W. Stipes called the third session of the Illinois Clay Workers' Association to order at two o'clock, January 23, 1907, in the Elks' Auditorium at Champaign.

The first subject taken up was a paper on "The Advantage of a Technical Education for Clay Workers," by Frank W. Butterworth of Danville.

**THE ADVANTAGE OF A TECHNICAL EDUCATION FOR
CLAY WORKERS.**

The tendency of business operations of all lines during the first six years of the twentieth century is toward specialism and consolidation. Manufacturing institutions of all classes either have been or are being revolutionized—first they specialize—make some one particular kind of product, then the factions making this particular specialized product consolidate, eliminate the plants which cannot produce cheaply enough on the quality of whose product is not up to standard and build new ones to take their places.

It is fair to suppose this condition will continue to a greater degree even than in the past. Capital is now seeking and will continue to seek large enterprises whether in one or a thousand locations. It is so in the clay industries particularly and profitably so, because of the extensive use of the older deposits of raw material as they occur in practically inexhaustible quantities.

The more extensive the consolidation and the larger the chunks in which capital invests, the more the need for the specialist to take charge of the enterprise and hence we arrive at the two things which make any business enterprise successful—*Money* and *Brains*. Of late years it has become quite as much a question of the money finding the brains (and it is glad to pay for them) as it is of the brains finding the money.

Twentieth Century, United States money wants and will get the best brains in the world, trained to the very highest point of specialism in the particular line of work it has taken up, trained not to talk about it, not to make excuses for not doing it, but trained to use money to the very best possible advantage and come what may—to *deliver the goods*.

We are confronted in clay working with this problem. "How can we train our young men in *the shortest possible time* so they will use money and get from it its maximum efficiency?" I say in the "shortest possible time," because this is the age when money wants not only the maximum knowledge, but it wants this knowledge, coupled with the maximum energy, adaptability and resourcefulness, and it has, whether right or wrong, figured it out that these last qualities are procurable to a greater extent in young men than in old. Money demands in this age that *young* men "do things," because it can then say "do more of them and do them better next time." Therefore, just as time is the essence of all other contracts, so it is of this and men must be capable clay workers while they are young and as efficient at thirty as they were formerly asked to be at fifty.

Before we can intelligently take up the question of how to train the young man, we must first find out what he has to be trained in. What must he know and what qualifications must he have in order to use capital to the best advantage in the clay industries.

Bearing in mind the fact that our raw material differs in the nature and temperament as much or more than the men who work over it and that clay working is not and probably never will be an exact science, what qualification and knowledge are necessary in order that given the money a man may be able with reasonable assurance, of ultimate success to:

First—Judge of the merits of a location for a plant, as to quantity, quality and accessibility of the raw material and market.

Second—Select the machinery, apparatus and kilns which are best adapted to that raw material and which will produce ware which will best suit the available market.

Third—Design and erect the plant in the best and cheapest way and in the least possible time.

Fourth—Operate that plant in the most economical way commensurate with the production of the most salable product.

Fifth—Sell that product to the best advantage and collect the money for it.

Taking these in the order named, the first requisite and particularly since the older deposits have come into general use, is a knowledge of geology especially of those strata in which our raw materials are found, in order that he may find the material. He must know the grand work

of chemistry in order that he may judge of its quality and he must have had practical business training in order to judge of the merits of the market. In the selection of his appliances he must know clays thoroughly, their chemical and physical properties, how best to dig, grind, mold, dry and burn them, in designing and erecting the plant a knowledge of engineering, civil, mechanical and electrical are precious requisites. In operation he must know geological conditions in order to detect quickly changes in raw material and guard against blunders therefrom; he must know chemistry as applied to clays and combustion in order that he may get the maximum results with the minimum expense; he must know engineering in order to quickly repair defective parts and a thorough knowledge of ceramics will enable him to reason, not from effect backwards three weeks to cause, but from cause to effect with a consequent minimum of worthless product, and he must be diplomatic with labor and able to secure maximum work. In order to sell the product he must have the faculty of making and keeping friends and a thorough knowledge of his competitors' facilities and product as well as those of his own plant.

Can a man become proficient in the above knowledge and qualifications by practical experience only? Decidedly, yes; but it takes a life time to do it. What is then the short cut? The answer is the same in clay working as in all other branches of industry—A Technical Education. In almost all other lines it is a recognized fact that a technical education in some branch of learning best fits a man in the shortest possible time for the successful career. The iron man is a chemist, metallurgist, the transportation man is an engineer, the mining man has his own special training. What then can it do for the clay worker? Can it help him to be able to do at thirty more and better work than his father did at fifty without it? Most decidedly, yes.

A technical education along the right lines is a short cut to the day worker, because in obtaining it he has the benefit of specialists in his line who are trained to impart knowledge; because he is enveloped by an educational atmosphere instead of a producing atmosphere as he would be at the plant; because his brain is being trained and developed to act quickly and decisively and almost instinctively upon problems in his chosen specialty as experienced educators are directing and developing it; because he is taking the direct method of getting knowledge instead of the roundabout and because all this is happening to him while his brain is receptive, young, elastic, and impressionable.

A technical education will make the day worker more proficient because his brain is better trained and developed—because he is able to reason from cause to effect as his superior education shows him why things happen and he can anticipate evils before they happen, instead of blindly blundering around to find a remedy after three weeks product is manufactured, because he will be better able to design machinery and apparatus to make new products as demand arises or even to anticipate the demand and create it by devising new products for particular uses, because his sense of the fitness of things and his artistic taste is better developed, because he can come much nearer to reducing clay working to an exact science, and because he can better apply his knowledge to practical uses.

Not by any means, however, must it be understood that a technical education will make a successful clay worker—it will probably do less toward proficiency than will education in the other professions and industries. It must be thought of only as a foundation upon which to build by practical experience, and as merely preparatory and supplemental to that practical experience.

The graduate from the Ceramic Department of one of

our colleges should realize that he is probably not so far along as the graduate from the Engineering Department, and that he is just starting, but that he is very well equipped for the race; his brain should be stored with information, but he must have the practical application of that at the plant in such a way as to be of the best value to the money invested.

When the clay worker leaves college he has usually but little idea of affairs generally, of the general business side of his chosen lines, but the trained brain can certainly grasp these details much quicker by reason of that training.

It seems to me that although the successful men in the business today are almost universally those who learned it in the school of experience and hard knocks, yet their places in years to come, are going to be taken by young men who had a technical training followed by practical experience and that it will only be a few years until clay working money will say to brains "Not alone how long have you been in the business, but also what special education have you had?"

I firmly believe that a young man, a graduate of one of our Ceramic Schools with five years practical experience has a higher efficiency as a clay worker than a man with the same natural aptitude with twenty years exclusively practical training, and if so they certainly have filled their mission.

At the conclusion of Mr. Butterworth's paper, he spoke of the need of action by the legislative committee of the association. He said that the school at the university needed \$30,000, that is, \$15,000 yearly, and that they had had only \$5,000. That the school had been very successful but that it needed to enlarge the buildings and needed to put in new machinery. That the association ought to send five or six men down to Springfield to induce the legislature to make the proper allowance. He asked for an expression from the members present of their willingness to see their own representatives personally and urge the matter upon them. In response to his request as to how many would do so, practically every member arose.

President Stipes—This is an excellent paper read by Mr. Butterworth, and it ought to be discussed. Will Mr. Blair give up his opinion?

Mr. Blair—I was thinking while Mr. Butterworth read that paper that he certainly pictured an ideal man, possessing all the elements and requirements for a successful clay-worker, in as few words as it was possible for a man to use. Personally I am in hearty sympathy with the suggestions made in the paper, and it is just what we are coming to in all lines, for that matter. If there are lines of industry and manufacture that have been more thoroughly revolutionized than others, it is only because the young men entering those lines have been more technically equipped than in other lines. I think the time has come when every clay worker, not only in Illinois, but everywhere, should realize that he has something to do for the future. No man lives for his own time. He must live for the generations to come and we must necessarily expect that our children will be broader and better equipped than we who have struggled along before them. I think the only way to do that is to give them the benefit of the experience of ourselves and those who have gone before us, and the only way to do that is to halt long enough in early life to grasp what you can from the school of experience, and then take that with your own ideas and resources and common sense and do the best that you can with it.

Mr. Pratt—Each individual member should see his own representative in regard to the appropriation for the school. With united work the allowance would be made.

President Stipes—Prof. Rolfe yesterday afternoon read a paper in regard to the work of the school, and as a good many new members have come in since then I ask the professor to read again that part of the paper which referred to the institute.

(Prof. Rolfe's paper appears in the first session.)

President Stipes—The next paper taken up will be by M. T. Goss, president of the Goss Engineering Co., of Chicago, who is on the program to tell "What Type of Boiler is Best for Clay Plants for Efficiency and Maintenance."

WHAT TYPE OF BOILER IS BEST FOR CLAY PLANTS FOR EFFICIENCY AND MAINTENANCE?

In order for me to express an opinion on this subject, giving my reasons for so thinking, it is necessary for me to call your attention to those types of boilers which I do not consider best. If what I say helps the operator of clay plants and other steam users to develop steam power for less money than it is now costing, my purpose will be served.

The type of boiler that is best for clay plants for efficiency and maintenance or for any other steam plant where such a boiler can be installed is an inclined water tube boiler, in combination with a furnace that will fulfil the following requirements:

The design must be such that all parts are accessible for inspection and repairs.

It must be so designed that all the heating surface can be quickly and thoroughly washed inside and soot removed from the outside.

It must be accessible for boring out the tubes when necessary.

The area of the connecting mediums between the lower drums and steam drum must not be less than one square inch to six square inches of tube area or a ratio of one to six, in order that rapid and complete circulation can result, which not only increases efficiency, but tends to lessen the cost of maintenance. Prof. Thurston said: "The best boiler is the one in which the circulation is most rapid and steady."

The steam drums should be horizontal and of sufficient diameter and length to provide a large steam liberating area and a large steam reservoir to insure practically dry steam, even when the boiler is developing 50% over load.

It should have ten square feet of heating surface for the evaporation of $34\frac{1}{2}$ lbs. of water per hour from and at or 30 lbs. per hour with feed water temperature of 100 degrees F. into steam at 70 lbs. gauge pressure. The tubes should be straight with diameter generally speaking not less than 3" nor greater than 4".

The grate area should not be less than one square foot to from 45 to 55 square feet of heating surface, depending on the character of coal used and the percentage of refuse present.

It must be so designed that a thick fire brick arched Dutch oven furnace can be built under the boiler, not over seven feet wide in any case, set with a rise of not less than six nor more than twelve inches; of sufficient length to insure a thorough mixing of the gases from the volatile matter with the oxygen from the inflowing air, while the furnace temperature is sufficiently high for ignition.

When I say inclined water tube boiler, I mean what is usually termed a horizontal water tube boiler, the angularity depending on the make.

The most accessible boiler for inspection and repairs is one that a man can get into to inspect and repair every inch of surface or riveted joints.

Unfortunately it is often necessary to wash boilers soon after they are cut-out, in order to get them again under steam pressure as soon as possible, it being especially so with small plants. It is urged by many that water tube boiler are not desirable for small plants because it requires too much time to wash them. This is doubtless true when water tube boilers of the hand-hole type are considered, as the time necessary to remove and replace the necessary number of hand-hole plates is not available in such cases; but if the man-hole end drum type is used, by the removal of two, and at most three man-hole plates, all the tube surface can be thoroughly washed.

The operation requires no greater length of time than is required to partly wash horizontal tubular boilers. It is impossible to wash more than 50% of the heating surface of such boilers, and the difference in efficiency in favor of the man-hole type of water tube boilers due to this fact alone is appreciable. So far as the removal of soot from the heating surface is concerned, I know of no boiler that this cannot be successfully and satisfactorily accomplished if the attention is given by the attendant.

The removal of scale at the proper time, from the heating surface of all boilers is of vastly greater importance than many steam users appreciate if the usual condition of a great many plants is a criterion to go by.

With water tube boilers of any type all such material can be entirely removed, leaving the heating surface in the same condition as when new, so far as the conduction of heat is concerned. It is not so with horizontal tubular boilers, at best only a portion of such material can be removed by the use of a steam hammer operating within the tubes.

The rapidity of circulation of water within a water tube boiler depends on the ratio between the aggregate area of all the tubes and the area of the medium connecting the front drum or header with the steam drum. I believe the nearer this approaches the full tube area the better.

Some types of sectional header boilers have sixteen inches of tube area to one inch of connecting medium area, and while the ratio of sixteen to one may be all right when considering the relation of gold and silver as a medium for money circulation, it is not all right when considering the relation of the tube area and connection to steam drum as a medium for the circulation of water in water tube boilers.

With such an arrangement, the circulation is slow; scale formation and mud deposit are more marked and the danger of burning tubes is greater than is the case with the man-hole end drum type having a ratio of six to one. The end drum type offers an opportunity for settling a large percentage of such material where it can be blown-out, which cannot be said of either sectional header or box header hand-hole type.

When considering the cost of maintenance of boilers there are several things to consider: the cost of cleaning the heating surface, comparison of which has already been made, cost of repairs and the life of the boiler for the required pressure.

It is generally conceded that with like conditions, the tubes of water tube boilers are no more likely to be burned than is the bottom sheet of horizontal tubular boilers. I am quite sure the tubes of the type of water tube boilers I advocate are not as likely to be burned with the same quality of water and care, and if this were not so, isn't it very much less expensive to replace a burned tube than to repair the thick bottom sheet of horizontal tubular boilers? This feature of this proposition, however, is of the least importance. When a new tube is put in a water tube boiler it is a new tube, when a fire sheet of a horizontal tubular boiler is repaired it is a damaged fire sheet, and this fact, together with the fire cracks at riveted joints, are doubtless responsible for the loss of thousands of lives and millions of dollars worth of property resulting from boiler explosions.

How many of you are now running your engines at less pressure than you should have for economy, owing to defective sheets? How many of you have been told by the authorities to put in new boilers because of this? If you buy new tubular boilers will you charge the entire cost to the maintenance account? If not you should, because had you bought water tube boilers in the first instance, made for a higher pressure, you could have used them for your required pressure longer than both old and new plants of horizontal tubular boilers will be allowed to be used for the same pressure, and when this is considered there will be a large credit to the maintenance account of water tube boilers.

Regarding the position of the steam drum, I think it is too generally agreed that it is more desirable to have it horizontal rather than on an angle, to be commented on, and the same may be said regarding the necessity of having a grate area of one square foot to from 45 to 55 of heating surface, especially when using low grade coal.

The impression is given by some that water tube boilers cost from 25 to 40% more than horizontal tubular boilers. This is approximately correct for small units, but it is a fact that a 200 H. P. water tube boiler made for 150 lbs. pressure can be made ready for steam for no greater sum than is required for two 100 H. P. horizontal tubular boilers made for 125 lbs. pressure, and for 500 H. P. or more the cost is less.

I have now reached the proposition that a boiler must be so designed that a thick fire brick arched Dutch oven furnace can be built under the boiler, not over 7 feet wide in any case and sufficiently long to admit of a thorough mixture of the gases from the volatile matter with the oxygen from the inflowing air, within a temperature sufficiently high for ignition, thus attaining good combustion, and an economical result, as well as a smokeless condition.

It must however be borne in mind that to secure these benefits and produce such proper mixture of volatile gases and oxygen it is necessary not to overtax the capacity of the furnace and combustion chamber. It is seldom that more than 50% efficiency is maintained with hand fired horizontal tubular boilers or with water tube boilers when the flame passes directly from the fire against the heating surface, because of incomplete combustion due to chilling the gases below the ignition point before the gases from the volatile matter becomes thoroughly mixed with the oxygen. It is seldom that less than 65% is maintained with hand fired water tube boilers having a long Dutch oven furnace under them. Seventy per cent is often maintained, and at times 75 and 80% are attained.

The difference between 50% and 65% efficiency represents a loss of exactly 30% of fuel. An approximation of the yearly loss on this basis in the United States due to incomplete combustion alone amounts to more than fifty million dollars (\$50,000,000.00).

If these statements are true, and they can be proven, a water tube boiler and furnace such as I advocate would be cheaper at a reasonable price than would horizontal tubular or water tube with bare tubes over the fire at a very much less price; but as stated previously, they cost but little more than horizontal tubular for small units, no more for 200 H. P., and less for larger plants.

Prof. Kent, on page 452 of his Steam Boiler Economy, states: "In ordinary practice in the Western states an efficiency of 50% or less is not unusual with coal burned in ordinary furnaces. It is quite possible to raise this to 70 or even 75% with automatic stokers, furnaces surrounded with fire brick and provision made for securing the intimate admixture of very hot air with the distilled gases. The raising of the efficiency of boilers by these means from 50% to 70% would effect a saving of many millions of dollars annually.

Experience has proven the impracticability of placing long fire brick surfaces under horizontal tubular boilers or any other fire tube boiler, because if sufficiently long to attain good combustion the heating surface so covered is lost and the extremely high temperature entering the tubes at rear head will and does invariably sooner or later cause leakage of tubes which have to be replaced after being rolled a few times.

If fire tile is placed on the lower row of tubes of water tube boilers of sectional header or box header type, good combustion can be received; the heating surface so covered is lost, the circulation of the hot gases around the lower tubes at forward end is not good, if heavy enough to be durable the tendency is to bend the tubes and the expense of removal and replacing when tubes are replaced is considerable. All of the above objections are entirely overcome by the use of a fire brick arched Dutch oven furnace under a water tube designed boiler for its installation.

Prof. Talbot—I would like to ask Mr. Goss in putting an automatic stoker in front of a water tube boiler, is it necessary to put a fire brick surface under the boiler?

Mr. Goss—Not if the arch of the automatic stoker is sufficiently long to get the proper admixture of the volatile gases and oxygen, thus attaining complete combustion before reaching the heating surface. I know of several plants where Dutch oven furnaces are in front of the boilers; there are also under the same boilers long fire brick arches. I believe the results are some better than would be received if the arches were not there. In other words, I don't believe that 6 feet is as desirable as 12 feet. I very much favor a thick arch supported by the side walls, properly set, rather than flat surfaces suspended on tubes or tee irons.

Prof. Talbot—I understand the flatter the arch the better, you don't want to get too much rise in the arch.

Mr. Goss—I don't know why a flat arch should be more economical than one with considerable rise, certainly the greater the rise the more durable it will be. I have had excellent results from arches 5 feet wide with a 5 inch rise.

When visiting an engineers' meeting a few weeks ago in Chicago this question of fire brick arches was brought up. I didn't have anything to say but was very careful to hear all that was said. The chief engineer at the First National bank building said he had an arch supported by side walls that had been in use four years. That satisfied me that there should be no trouble with arches. He said from his experience it depended a great deal on the manner in which it was put up.

Mr. Butterworth—This has been a very interesting paper, and I appreciate it very much. The question I want to ask is this! I notice a great many industries are using refuse

for firing boilers. In a brick yard in burning brick we get a lot of refuse from the kiln. There is a lot of coke invariably. We do not get good combustion. When there are clinkers there is a lot of waste. We have been investigating the use of this under our boilers. I should like to know whether you have had any experience in utilizing such.

Mr. Goss—I have never had any experience with that, but I don't see any reason why it could not be used if after removing as much clinker as possible it is mixed with new coal. In my judgment, it would require additional grate surface to get the regular capacity, owing to the large percentage of refuse, and the draft should be good.

Mr. Mamer—The question I want to get at is, would you think that the expense would be advisable in building a Dutch oven in front of a tubular boiler?

Mr. Goss—As indicated by my paper, I think it an unfortunate circumstance that would make it necessary to use a horizontal tubular boiler at all, but there are cases in some building basements where no other kind can be installed. In such a case I most certainly would, if possible, put a Dutch oven in front of it, as the benefit received from improved combustion would soon pay for its installation. Owing to lack of room it is sometimes necessary to build a long fire brick surface under a tubular boiler in order to comply with the smoke ordinance. The conditions at the Ashland block at Chicago is a fair example of what sooner or later happens with such an arrangement. The extremely high temperature entering the tubes at rear head causing frequent and very expensive repairs, besides diminishing the heating surface to the extent of the surface so covered.

WHAT HAS PRODUCER GAS DONE FOR THE CLAY MANUFACTURER DURING 1906?

President Stipes—"What Has Producer Gas Done for the Clay Manufacturer During 1906?" is the title of the next subject, and it is now ready for discussion.

Mr. Barr—They have tried the experiment at Galesburg this last year, and have thrown out the apparatus, as it was not at all successful.

Mr. Blair—Mr. Powell, what success have you had in the last year that you have been using it?

Mr. Powell—I can say for producer gas that it has been successful at our plant. We are using a 12 chamber continuous coal burning producer gas kiln. We can burn our tile well; we can overburn them with the producer gas as well as we can with coal, but you cannot blacken them. As to its advantages, it has many, because of the fact that the coal is all burned at one point. The gas is produced in a common producer and is conveyed to a flue in any compartment of the kiln connected with a sheet iron conductor which is carried to the kiln and comes in contact with the hot gases from the kiln just behind, and is ignited. The advantages of producer gas, as I understand it, though I don't know much about it, is the fact that the gas is ignited or burned from the hot gases in the kiln. There is but very little advantage in producer gas over coal, if any, unless burned with hot gases at a temperature above 1,200 degrees. If you attempt to burn producer gas with cold air, you will have a failure. It is very simple. We are satisfied with the

course that we are taking. Our kiln is a Youngren continuous Kiln. P. L. Youngren of Milwaukee is the only one who builds this kiln. I think that we can burn up to any temperature. I do not know how high a temperature, but I think that we burn to about 1,800 degrees. We use Green county nut coal, fourth grade. It is anything from 3" down. It passes an $\frac{1}{4}$ " screen, and the larger lumps taken out of the screen. We do that simply for convenience. We have used mine run, but it is very hard for the men to work, they don't like to work it and there is no economy in it.

In reply to a question as to what the economy would be in dollars and cents: That has a wide range, owing to different conditions. A continuous kiln, to get the best results out of it, would have to run to its full capacity and we have never been able to run our kiln to its full capacity except at short intervals at a time, and during those short intervals, we were not able to get a test of the fuel it would take.

President Stipes—I understand that Mr. Underwood knows something about the producer gas plant at Alton.

Mr. Underwood—I visited the plant at Alton last summer and Mr. Rogers showed me the producer gas plant. I never saw anything finer. I was told that the plant was burning mine run coal. It was very fine.

Mr. Richardson—We are interested mostly in the use of producer gas for burning our wares. There is no question about the future of producer gas for generating power, though it is quite probable that the clay working industry will be the last to take this up for the reason that we have such good use for exhaust steam in drying. We have the building of a large clay working plant being built in Ohio in which producer gas is going to be used for power. I expect to learn quite a good deal from it. Also, producer gas will be used for burning in a continuous kiln. The reason that the Ohio people decided to use producer gas for burning was that they were to build three or four plants and because of their being scattered it was thought best to run all the plants by electricity. But in a single plant, I don't think that would be advisable at the present time, where you have clay ware to be dried.

President Stipes—"Can Brick Be Dried by Waste Heat From Up-draft Kilns?" This is for discussion.

Mr. Blair—I can only say that that question has been answered in the affirmative a good many times in the national conventions. In Milwaukee two or three of the concerns there claim to be drying brick successfully in that way.

President Stipes—How do they go about it?

Mr. Barr—The draft of the fan pulls the heat down. If any one interested will write to L. E. Rodgers Engineering Co., of Chicago, I think he will give them all the information they want. The Geo. H. Clippert & Bro. Brick Co., at Detroit, Mich., have a plant of this kind which is very successful.

Mr. Blair—There are a dozen plants using that system here, and they are all over the country. It is simply a tunnel provided in the center of the kiln with arms leading to that from either side and all you have to do is to start your fan.

A Member—The tunnel in the middle of the up-draft kiln is closed with a fire clay slab. That is removed and the fan pulls the heat out. Up in Wisconsin they have another method of drying with the waste heat, but they take from the top of the kiln. Under the roof of the up-draft kiln they had suspended their pipe 24" in diameter and for every two arches they had an opening 16" long and 10" wide with a slide under so that they could slide it up.

President Stipes—I notice that we have a couple of discussions here that we might take up. "Where and at what distance should expansion joints be on a brick pavement?"

Mr. Blair—That was gone over pretty thoroughly this morning. (See second session meeting.)

Mr. Mamer—I would like to ask a question: What is the composition of these expansion joints, as a rule?

Mr. Blair—I am inclined to think that the most satisfactory expansion cushion that I have seen is made from No. 4 or 6 pitch, filling the bottom with No. 4 pitch and then putting sand over the top. That will remain soft for years and will go and come with the expansion. You put it crossways in the street. That is a frequent method. I have never seen any bad results in a street where the expansion cushions were simply put along the curb and nowhere else.

WHAT METHOD SHOULD BE USED IN DRYING SOFT-MUD BRICK IN MEDIUM SIZED YARDS?

President Stipes—There seems to be another question here. "What method should be used in drying soft-mud brick in medium sized yards?" As no one responds, it looks as though we hadn't a soft-mud brick man in the crowd.

A Member—What was meant by "medium sized yard?"

President Stipes—I would consider a yard of 20,000 to 25,000 a day a medium sized yard.

Mr. Blair—Mr. Chairman, I know that we have a brick-maker in our town that makes soft-mud brick. He makes about 3,000,000 to 4,000,000 a year; dries them in an open shed, and I will say for him that it is the neatest and the nicest soft-mud yard I ever saw in my life; and that man makes money, enough money so that he is enabled to take his family for the winter to California or down in Cuba. He dries altogether in the open air.

President Stipes—Tell us about that yard. I think we have struck something that we are all interested in.

Mr. Blair—I am rather sorry that I spoke of it. I only know that it is a fact. But since I did speak about it I will say that it is Mr. John W. Huff. I think he uses a Monarch machine. I cannot give the information that he could give. He dries them on pallets and sets these pallets in a rack and there the brick are dried.

President Stipes—The racks are large sheds or separate sheds?

Mr. Blair—Separate sheds. I don't know the dimensions, but the isles go to the separate sheds. The roof slants off from each side, and I suppose the roof is probably 6 feet, so that he sets the pallet in and uses about 2½ feet on either side for putting in the pallets.

Mr. Potts—At one time I believed that it was impossible to dry soft-mud brick in less than 38 hours, but within

the last two years I have had an experience that shows me that it can be done in less time by the using of pipes and steel pallets. It is easy to build and cheaply operated. We have dried brick in some places in six hours by steam. In others, it would take 8 and 10, depending somewhat on the nature of the clay.

President Stipes—You put the pallets right on the pipes?

Mr. Potts—Directly on the pipes; yes, sir. It is an old thing. In fact it has been used in Philadelphia for some ten or twelve years, but in a crude way.

President Stipes—Your attention is called to the fact that the last paper on the program for today is "The Esthetic Possibilities of the Use of Clay Products in Architecture," by John W. Case, professor of architectural design, University of Illinois. Prof. Case was to have illustrated this paper with stereopticon views showing the construction of buildings, but the lantern that had been erected in the hall here was not large enough to accommodate the professor's slides. He can give this lecture if we go down to the university. It is a very short ride and we have a special car here ready to take all the members over. We will have ample time to go to the university, listen to his excellent paper, enjoy the views, which will be given this year with colored slides, and be back here in time for dinner.

Practically all the members decided to accept the invitation, and began leaving the hall for the car.

President Stipes—The meeting is adjourned to Thursday morning for the last session.

THE ESTHETIC POSSIBILITIES OF THE USE OF CLAY PRODUCTS IN ARCHITECTURE.

When we consider that the architectural remains of the oldest nations of antiquity are largely composed of clay products; that mankind has been using and studying burnt clay products ever since; and that today we are still studying and producing new results in burnt clay and adapting old results and inventing new uses; it becomes evident that the possibilities in burnt clay are infinite.

The representation of human life, the human figure has always been of engrossing interest to mankind, and yet our architecture today is almost devoid of representations of the human figure. It is only in monumental work that the figure appears in sculpture or in mural painting.

The principal reason is that our buildings are mostly for utilitarian purpose, and the cost of sculpture is prohibitive. But burnt clay, because of its pliability and its hardness after firing gives us a material for figure representation on the better class of buildings.

One of the most interesting examples of colored terra cotta enameled figure sculpture applied to buildings is found in Pistoia, Italy, on the facade of the hospital of the Ceppo. This work is credited to the Della Robbia family. It consists of a frieze of panels each about 20 feet long and 4 feet high separated by narrow panels. This frieze is about 33 feet from the ground and extends across the entire facade of the building above an arcade of six arches, the spandrels of which are decorated with round medallions.

The modelling is in low relief, the backgrounds are white or blue, the draperies polychromatic. The entire effect is brilliant but not crude in color.

The subject of the panels are seven acts of mercy of the Misericordia; the Monks are seen visiting the sick and the prisoners; feeding the hungry; giving drink to the thirsty; burying the dead; giving alms, and washing the pilgrims. The vertical panels are filled with single standing figures. In the medallions are figures representing the Annuncia-

tion, Madonna in Glory, the Conception; and coats of arms. The borders of the medallions are composed of fruit.

These terra cottas are enameled in color, by a process which remained a secret in the Della Robbia family for more than a hundred years.

Luca Della Robbia lived in Florence in the fifteenth century, that age of marvelous artistic attainment. In his youth he was apprenticed to a goldsmith which he learned to draw and model in wax with such proficiency that he

of Majorca, 1115 A. D. The Moors introduced the art of enamelling in the island of Majorca. They obtained it from Persia where it had survived from ancient times, thus enamelling is traced back to Assyria. The early Italian ware, called Mezza Majolica, was covered with a slip or thin coat of clay, upon which the colored patterns were placed and coated with a lead glaze forming a beautiful iridescent lustre. In some examples this slip of white clay was cut away in pattern, disclosing the darker body



THE HOSPITAL OF THE CEPPPO, SHOWING MISERICORDIA PANELS IN PLACE.

abandoned the goldsmith art to take up the art of sculpture in bronze and marble. Although he made a success of this work and executed important commissions in Florence, Vasari tells us that Luca found the effort was great and the recompense small. There seems to have been a good deal of the American spirit about Luca. He was intensely ambitious not only for fame but also for money and was con-

beneath, and then glazed with lead. This was called "sgraffito."

It is probable that Luca knew of this lead glaze, for he succeeded in producing a tin enamel which protected his terra cotta from the injuries of time. Further experiments by Luca produced enamels of different colors, through the use of mineral oxides. However, Luca was not satisfied.



PANEL SHOWING THE VISITATION OF THE SICK.

tinually trying new ideas. Luca turned from bronze and marble to clay. Here was a material plastic, easily formed, and yet made durable by firing. Still, it lacked polychrome, and Luca wished to render it imperishable. Some hint must come to him from earlier Italian work, introduced into Italy by the Pisans after their conquest of the island

These enamels were applied to modelled work, he wished to represent full light and shade and color upon a flat surface; to paint with colored enamels, thus doing away with the intermediate process of modelling. This process he did not succeed in perfecting, and although the secret of these enamels remained in his family until 1507 (Luca was

born 1400), none of his successors possessed the inventive genius of Luca; indeed, this field of investigation still remains open to us.

Luca's enamel was of a peculiar whiteness and excellence. White and blue were the basis of his color schemes, although he used green, yellow and violet.

The reliefs on the Hospital of the Ceppo were made by Luca's nephew Andrea, and Andrea's son Luca II. They were eleven years in completing the work.

inherent qualities to form pottery by itself, would adhere to the coarser colored body of the earthenware, thereby forming a smooth white ground. The early Greek vases, the faience of Persia, the Mezza Majolica and the Sgraffito of the early Italian Renaissance, and our English slip ware are examples of this method of giving a smooth white surface to coarse colored earthenware. A similar result to the slip covering was also produced by the use of a silicious glaze, rendered white and opaque by the addition of oxide



THE MONKS VISITING THOSE IN PRISON.

The color of burnt clay depends upon the chemical ingredients of the clay. Kaoline, or china clay, is a hydrous silicate of alumina containing 47 per cent. of silica, 40 per cent. of alumina, and 13 per cent. of water. It burns to a white or yellow color. Clay containing oxide of iron burns to a red color. Fire clay contains a larger per cent. of silica than Kaoline does.

Glazier in his book on Historic Ornament says: "Pottery clay may be classified under three divisions or headings: (1) Earthenware. (2) Stoneware. (3) Porcelain. Under the first are grouped the largest number of Ceramic wares. The pottery of Egypt, the faience of Assyria and

of tin. Early Assyrian faience, Della Robbia ware, the Majolica of Spain and Italy, and the wares of Delft and Rouen are earthenwares coated with a tin enamel.

The silicious glaze here referred to is prepared by fusing silicious materials with soda or potash, and is known as vitreous, or glass glaze. Plumbeous, or lead glaze, is produced by the addition of oxide of lead to the silicious glaze, rendering it more fusible, and still transparent. A white opaque enamel formed by the use of oxide of tin with the vitreous glaze, is termed Stanniferous, or tin enamel. These different processes of covering the porous body of the earthenware largely influenced the decorations and scheme



WASHING THE FEET OF THE PILGRIMS.

Persia, the Greek and Etruscan vases, the famous red ware from the Isle of Samoa, and its counterpart the Roman Samian ware, the beautiful majolica of Spain and Italy, the pottery of Rouen, St. Porchaire, Delft, and most of our English pottery are earthenwares; the paste or body consists of natural clays selected for their plasticity, their hardening qualities, their fusibility or their color, and when burnt have a porous opaque body, usually dull in color. This dullness was usually overcome by coating the ware with a slip of fine white clay, which, whilst not possessing

of coloring.

The beautiful faience of Damascus and Rhodes is covered with the silicious slip or glaze, the colors being rich blues, produced by cobalt; turquoise and green, by cobalt and copper; and purple, by the use of manganese; and then covered with an alkaline glaze.

In the Rhodian ware the same scheme of color prevails, except that the purple is replaced by fine opaque red of great body, called Rhodian red, produced from Armenian bole.

On the Italian Majolica, with its tin enamel and plumb-

eous glaze, there are fine blue, turquoise and green colors, but red is very poor in color, and is generally replaced by rich yellow from antimony, and orange from iron.

This white tin enamel was undoubtedly introduced into Europe by the Moors, as some tiles in the Alhambra date from 1273-1302.

A large number of bowls and dishes, called Samian ware, of Roman importation, have been found in England. The paste is usually of a fine sealing wax red, with a good glaze.

In Rouen ware, the ground is generally white, but some fine examples at South Kensington have a soft yellow ground, a rich Indian yellow being sometimes introduced with the blue decoration.

Bernard Palissy, 1510-90, by repeated experiments discovered the stanniferous or tin enamel. His first productions were Jasper ware, warm and brilliant in color and richly enamelled.

Marbled, combed and tortoise-shell ware were formed by



PANEL SHOWING THE GIVING OF ALMS

The red paste having been pressed into the mould, the interior was smoothly turned in the lathe.

About 1500, the production of tiles was introduced into Holland, quantities of small blue and white ones, being made at Delft for the lining of fire places, etc.

In the 16th century, the porcelain of China was introduced into Europe by the Dutch and Portuguese traders, and much of the Delft or Rouen ware subsequently produced was an imitation of this oriental porcelain. "Delft" ware which takes its name from the small town of that name in Holland, dating from 1500 A. D., is a ceramic coated with stanniferous enamel, decorated with a full and liquid

using color slips or clays. Agate and onyx ware were formed by layers of different colored clays, crossed, cut, and pressed into moulds.

In 1871, Wedgwood introduced his famous Jasper ware, and Jasper dip'or washed Jasper. This latter ware was dipped into admixtures of metallic oxides, producing blue, lilac, pink, sage green, olive, yellow and black colors as desired.

Stone-ware differs from earthenwares, owing to the presence of a larger percentage of silica in the plastic material, which, being fired at a greater degree of heat, vitrifies the body or paste into a kind of glass, thus ensuing a closeness



MONKS GIVING DRINK TO THE THIRSTY

brush upon the absorbent enamel ground, and then glazed with a plumbeous glaze. Some of this Delft ware is very fine in quality, the cobalt blues under the glaze being remarkably soft and rich in color.

At Rouen a fine earthenware covered with tin enamel was manufactured. The decorations were usually in blue and with overglaze painting, i. e., after the white enamel was fired, finer and more delicate detail being obtained by this process, but at the cost of the purity and liquid softness of color which is so characteristic of Delft and Oriental underglaze painting.

and hardness of material not possessed by ordinary earthenware. Stone-ware is usually glazed during the firing by throwing common salt into the kiln, which being volatilized, reacts upon the silica in the body, forming with it a silicate of soda or glass, having a minute granular texture.

A peculiar red stone-ware, porcelain, or Red China as it was called, was made near Burslem by the Brothers Eilers, 1688-1710, the ornamentation being obtained by pressing sharp intaglio copper moulds upon pieces of clay attached to the shaped ware.

CLAY RECORD.

Porcelain is technically known under the terms "hard paste" ("pate dure") and "soft" ("pate tendre"). Hard porcelain is made from clays containing much alumina and felspar or decomposed granite, having but little plasticity, which necessarily influenced the shape or profile of the vessel.

The color scheme and the character of the modelling for terra cotta in buildings is determined by conditions of light

color should be divided and varied inversely as their distance from the eye.

STANFORD WHITE WAS TO BUY OLD CAMP PLANT.

Publications were made at Wooster, Ohio, that Stanford White, the man murdered by Harry K. Thaw, was about to interest himself in the clay plant formerly owned by H. B.



MONKS EMBALMING AND LAYING OUT THE DEAD.

and distance from the eye. A color scheme, suitable for an interior room in diffused light, would be at a disadvantage if placed in full sunlight, and vice versa.

A color scheme, such as the Greeks used of strong, crude colors, reduced in effect by the glare of intense sunlight would be crude in effect if seen in climates lacking strong sunlight, a quieter color scheme is required where gray days are prevalent.

The finish of the modelling should be varied to suit the atmospheric effects and also the distance from the eye.

Della Robbia and Donatello each modelled a frieze of singing boys for organ lofts in Florence. Robbia's singers

Camp, Akron, O., in the western part of Wayne county when he met his death. It is stated that Mr. Huffman, of the brick and tile plant at Horace, near Shreve, had interested White in the possibilities of the industry, and that White had given out the information that he would put money in the plant and have it run at a profit. He had an appointment to visit the place the Thursday following his death. It is said that very little work is now done at this plant. It is interesting to note also that Thaw was at one time a student at Wooster university.



MONKS GIVING FOOD TO THE HUNGRY.

seen close at hand seemed instinct with life, the muscles of the neck were seen expanded with the effect of singing, but when viewed at a height of twenty feet from the pavement, these effects were lost and the composition seemed tame compared with Donatello's whose modelling seemed coarse and sketchy seen at close view.

It is evident that the same results would apply to color schemes. Seen close at hand, the color scheme should be delicately varied, composed of tertiary colors, while seen at a great height from the pavement the colors should be strong and in masses, stated as a general rule. Masses of

MUST MAINTAIN PAVEMENT FIVE YEARS.

Contractors who lay brick pavement in Milwaukee, Wis., must guarantee to maintain it in good condition for five years, if a report agreed upon by the judiciary committee of the council recently is adopted. This has been the rule as to asphalt pavement. After much opposition and dispute, the bill of Contractor Henry Hase for laying brick pavement on Mitchell street has been approved by the committee. The Socialists opposed the bill.

A VERY COMPLETE BRICK PLANT AT COLUMBUS, GA.

One of the most complete brick plants in the South is that of Mr. A. L. Crawford, of Columbus, Georgia. While it is one of moderate size, it is arranged with view to economy and convenience, both in manufacturing and shipping.

The works are located at Girard, Alabama, opposite Columbus, along the Chattahoochee river, and on the main line of the Andalusia branch of the central of Georgia railroad, which furnishes convenient railroad and river transportation to the many points to which Mr. Crawford's brick are shipped.

The principal product is a first grade fire brick made from a strata of plastic fire clay, which is as good as any that has been found in the Alabama Hills. Mr. Crawford owns fifty acres of this clay, which is located about three-quarters of a mile from the plant. The material is hauled to the works by that unique combination of perversity and laziness "a darky and a mule," and run through a Raymond No. 20, Disintegrator which pulverizes it for the Pug Mill. After a thorough pugging, the clay drops by gravity into a No. 2 Daytonian Brick Machine, which forms it into a smooth column with perfect edges at the rate of about 30,000 brick per day. The Cutting Table is a Triumph belt delivery.

The green product is taken from the off-carrier belt and placed in a drier of Mr. Crawford's own design and construction. It consists of four tracks using exhaust steam during the day and live steam at night. The tunnels are arranged so that the McKenzie elevating and lowering cars,

just at the foot of an embankment close to the plant, and is hoisted to the works by means of cars and winding drum.

The buildings are frame and substantially put up, however, the mild climate does not require as close siding as does the more Northern plants. The entire equipment was furnished by The C. W. Raymond Company, of Dayton, Ohio, and is thoroughly modern in every detail. The power is derived from a 90 H. P. fire tubular boiler and 75 H. P. engine.



VIEW SHOWING THE A. L. CRAWFORD BRICK WORKS AT GIRARD, ALABAMA.

Mr. Crawford is one of the best known citizens of Columbus and his progressive energy is well shown by the fact that the amount of business now coming in threatens to seriously overtax the capacity of his plant.

AMERICAN SEWER PIPE STATEMENT.

In submitting the annual report of the American Sewer Pipe company as of Dec. 31, 1906, President F. H. Kondolf stated that the company is in good financial condition, with plenty of cash working capital, and that since the balance sheet was made up all bills and accounts have been paid.

The company also paid off \$50,000 of its bonded debt. While car shortage and other drawbacks made a material difference in the business of the company, the net earnings, after charging off for depreciation, were \$278,965.74.

Following is a condensed balance sheet as of Dec. 31, 1906, which compares as follows:

ASSETS.			
	1906	1905.	
Cost pr., etc.....	\$9,263,818	\$9,253,029	
Cash	194,029	190,850	
Accounts and bills received.....	339,813	342,565	
Goods and supplies	754,581	850,110	
Totals	\$10,552,243	\$10,636,554	
LIABILITIES.			
Capital stock	\$7,805,700	\$7,805,700	
Bonds	1,484,000	1,532,000	
Accounts payable	40,670	33,969	
Wages accr.	34,471	30,754	
Int. and tax ac.....	39,731	39,734	
Dividends	58,542	58,543	
Surplus	1,089,127	1,135,855	
Totals	\$10,552,243	\$10,636,554	



THE KILN VIEW OF THE CRAWFORD BRICK WORKS.

furnished with the Raymond system of open air drying, are used to advantage. This eliminates a large number of ordinary drier cars which are ordinarily used with tunnel driers. The dried brick are set in one of two Raymond Penn Round Down Draft Kilns, which burn them to an even temperature throughout.

Besides the fire brick and shapes, Mr. Crawford also makes a limited number of common brick, pavers, side-walk tile, etc. These are made from a river lowland clay found

CLAY RECORD.

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No. 4

"I like to read American advertisements. They are in
themselves literature, and I can gauge the prosperity of the
country by their very appearance."—William E. Gladstone.

When times are dull and people are not advertising is the
very time that advertising should be the heaviest. Ninety-nine
out of every hundred merchants advertise most when there is
least need of it, instead of looking upon advertising as the pan-
acea for their business ills.—John Wanamaker.

Short sermons make popular preachers.

Never judge a man by the company he keeps. It may be
his wife's folks.

Its impossible to love a man for the enemies he has made
if you are on the list.

Men with cheerful dispositions are more inclined to bor-
row money than trouble.

Some men spend more time trying to avenge their fancied
wrongs than they do in trying to keep within their rights.

Don't waste any time trying to get something for nothing.
Adam got the apple without money and without price—and
remember his finish.

Devote your spare time to the consideration of your own
faults, for a change, and you will have less to say about the
faults of your neighbors.

Subscribe now for the only semi-monthly clay journal
that is printed twice per month in America. It costs only
one dollar for a whole year. Do not delay but become one
of our school at once. It will pay you.

SOUTH AFRICA OFFERS A GOOD MARKET FOR
THE CEMENT INDUSTRY.

Consul John H. Snodgrass, of Pretoria, in response to
inquiries regarding the cement industry in South Africa
writes:

Since the British occupation here, South Africa has pre-
sented one of the very best markets in the world for cement
because of the new life infused in the country through the
public works departments of the various colonies, includ-
ing harbor extensions, railway building, sanitary projects,
cold-storage concerns, and the like. Business blocks have
been added to all the cities in which cement has entered to
a large degree, an outside veneering always being added to
the brick interior both in dwellings and office buildings. It
is not surprising, therefore, that during the past few years
the importations of the product have not fallen much below
\$1,000,000; in fact 1903, the banner year in all importations,
records \$2,500,000 worth of cement, while 1904 was but
little behind that record. In that competition America cut
but little figure, shipping to the Transvaal less than \$400
worth in 1903 and about double that amount the following
year, while Germany's contribution during the same period
was \$341,875 and \$529,800, respectively, England follow-
ing with \$217,725 and \$252,325 for those two years.

Before 1898 the United Kingdom furnished the bulk of
the cement imported, but with the subsidizing of steamship
lines and cheap rates to seaports in the Fatherland, Germany
entered the South African field that year and captured 16
per cent. of the total imports. Four years later, Belgium
and Denmark entered the lists, when the position of the
principal competitors stood as follows: United Kingdom,
43.4 per cent.; Germany, 37.2; Belgium, 18, while the re-
maining 1.4 was divided between Denmark and other Eu-
ropean countries, the United States not figuring at all. In
1903 other nations, viz., Austria, France, Italy, Holland,
and Sweden, took part in the competition and captured
part of the trade of Germany. Great Britain increased to
51.4 per cent. and Germany dropped to 23 per cent. Amer-
ica, in the meantime, had sold in the neighborhood of \$400
worth in that twelvemonth—a poor showing. From that
time, however, the United Kingdom has been gradually in-
creasing its hold, and advanced from 70 per cent. in 1904
to approximately 90 per cent. last year, of the total imports,
while Germany decreased nearly to its standing of 1898.

The British affirm that their hold on the market is due
to the firm and united action of their manufacturers, to the
uniform quality of their product, and also, to some extent,
to the customs preference, the last-named reason probably
furnishing the greatest impetus to their trade, though they
claim that the subsidized steamship lines of the Germans make
up for the preferential tariff.

The one factory in South Africa, situated just outside the
limits of this city, was a failure up to a year ago, when
Ezekiel Davidson, an American, was brought here and
placed in charge. He immediately purchased an American
kiln, which was substituted for an ancient one that had been
in use, and introduced American ideas. This resulted in
1905 in a production of 75,000 barrels, which was marketed

here at 25 shillings (\$6.08) a barrel, and I am told that many times that amount could have been sold in Johannesburg alone. It is understood that the Pretoria factory's capacity will be increased threefold, and that other mills will be erected near Johannesburg and in the Orange River colony.

My advice to Americans is to get into the market. If it is not possible to compete with the British preferential tariff, then erect factories here. That would bring a surer and safer reward than a hazard investments in gold and diamond claims.

I have been asked the question, "What suggestions do you offer to American firms desiring to sell in this country?"

I reply, first, take warning from the case of Germany and do not place an inferior product upon the market simply because it is cheap and sells well at sight, but which in the long run means ruin. Produce as superior an article as is said to be produced in England, and if it can be made at an equal cost at home I believe, that even with a preferential tariff, the American manufacture will, in the course of a comparatively short time, take precedence of the English goods. It will be futile to attempt to introduce American cement here without a strong effort by way of traveling salesmen who will be able to organize the territory through the agencies they shall establish. Should the ocean freights between New York and the coast towns of Africa be reduced and the lines be removed from the combine, then America will stand a splendid chance of furnishing the bulk of cement to South Africa.

A. A. GERY MADE PRESIDENT OF THE SEABOARD COMPANY, AND WILL SUPERINTEND CONSTRUCTION OF THE PLANT.

At a meeting of the directors of the Montello Brick Works, Reading, Pa., the following executive committee was appointed: Chairman, Lambert A. Rehr; Dr. Walter A. Rigg and A. J. Brumbach. They will have entire charge of the plants of the Montello Brick Works, Reading Shale Brick Company and the Middletown Shale Brick Company.

A. A. Gery, president of the United States Brick Company, will devote his entire time to the construction of the Seaboard Brick Company's plant at Catskill, N. Y., along the Hudson river, which is one of the constituent companies of the United States Brick Company, and of which Mr. Gery was elected president.

The Seaboard Brick Company, of New York, is capitalized at \$7,500,000. The plant will produce 1,000,000 a day, or 300,000,000 a year—more than all of the United States Brick Company's factories combined.

OBITUARY

Ira Francis Pinkham died at his home at Dover Point, N. H., after a long and painful illness. He was 73 years of age and for nearly 40 years was engaged in the manufacture of brick.

Isaac H. Vanarsdale, of Flack & Vanarsdale, proprietors of the Cornwell pottery at Cornwell, Ontario, is dead. He was 68 years old and had been in business in Cornwell for 40 years.

FIRE! FIRE! FIRE!

Fire threatened the plant of the Northwestern Terra Cotta Company, 1000 Clybourne Ave., Chicago, when a blaze broke out in one of the kiln sheds. The loss was only \$1,000.

A fire did \$100,000 damage, practically destroying the large plant of the Ohio Ceramic Engineering Co., on the Brear Road, Cleveland, Ohio. L. L. Brown is secretary of the company.

Fire evidently of an incendiary origin damaged the plant of the Mason Brick Co., Mason, Ohio, to the extent of a few thousand dollars. An investigation is being made.

ACCIDENTS, DAMAGES AND LOSSES

A cave-in of a kiln at the Trumbull Brick plant at Warren, Ohio, caught three men and one, Sam Hoyle, sustained a fractured skull.

S. P. Wendstrand, who was employed by the Ridgeway (Pa.) Brick Works was badly scalded by falling into a pool of hot water which was caused by exhaust steam.

Willard Robbins has sued the Ferris Brick Co., Waxahachie, Texas, for \$10,070 damages for the loss of two fingers which were badly mangled in a brick machine.

The Capital City Brick Co., Columbus, Ohio, has had a suit commenced against it for a receiver. W. H. Fish is president and Charles Harrison secretary of the company.

L. C. Parker and Jim Brady, engineer and machinist at the Denton (Texas) Brick Co.'s plant were badly burned while attempting to build a fire in a furnace which uses oil.

Through an explosion of a fuse at the works of the Kier Fire Brick Co. at Salina, Pa., Simon Nixon, 76 years old, and an employe, was blown to pieces and four other employes injured.

A judgment has been granted to the Kiesel Fire Brick Co., Rochester, N. H., against the Boston & Maine Railroad for the damage done to their plant by partly burning it by a spark from an engine.

H. A. Talbert, convicted of murder and serving a life sentence made his escape from the convict-camps of the Palmer Brick Co. of Atlanta, Ga. He was a man of means. No trace of him has been found.

D. K. Farris asks \$5,300 damages from the Globe Brick Co., Waxahachie, Texas, on account of being injured while attempting to lift a large shaft with other employes. The other men dropping their end so as to injure him.

A receiver is now being asked for the Oudin-Bergman Fire Clay Mining and Mfg. Co. at Spokane, Wash., by Thomas F. Conlan, who owns one-half interest in the property and cannot elect officers on account of a tie vote.

Herman Kinzel wants \$10,000 damages from Spear & Clarke, brick manufacturers at Toledo, Ohio, because of a wheelbarrow loaded with brick falling upon him. He claims that his left ear is so injured that he can't sleep on his left side.

The Stoneware Pipe & Tile works of East Alton, Ills., has brought suit against the Big Four Railroad for \$75,000 damages suffered by the company through alleged improper construction of the railroads embankment which caused water to flood the plant.

TRIED TO WORK SPANISH "DARLING DAUGHTER" GAME.

P. A. Wolff, the well-known brick manufacturer, Cedar Rapids, Iowa, would like to know how some person who signs his name "Bladislableva," and who claims a jail in Madrid, Spain, as his place of residence, was able to get hold of his name and address and why he singled him out from the eighty million or more other inhabitants of the United States as one who would be likely to "bite" on a swindle that has become decidedly ancient in this portion of the state. The method by which the gentleman with the unpronounceable name expected to extract some good American money from Mr. Wolff is partially explained in the following letter received by him a few days ago:

"Mr. Philip Wolff, Cedar Rapids, Iowa.

"DEAR SIR: Notwithstanding that I know you only from good inquiries of your honesty, my said situation compels me to reveal you an important affair in which you can procure a modest fortune, saving at the same time the one of my darling daughter.

"Before being imprisoned here I was established as a banker in Russia, as you will see by the enclosed article from one of many English newspapers which have published my arrest in London.

"I beg to beseech you if you will help me to obtain a sum of \$480,000 I have in America, and for that to come here to rise the seizure of my equipage, paying to the registrar of the court the expenses of my process, to take up my portmanteaus containing a secret where I have hidden the documents indispensable to recover the said sum. As a reward I give you the third part, viz., \$150,000.

"I cannot receive your answer in the jail, but you will send a cablegram to a person of my reliance who will deliver it to me surely.

"I await your cablegram to instruct you of all my secret, and hoping to receive, dear sir, your best sympathy, I am
"Yours truly,

"BLADISLABLEVA."

"First of all, answer by cablegram, not by letter, as following: Fausto Gibon, Lista Telegraph, Madrid, Spain. Accept, Wolff."

The alleged newspaper clipping enclosed is also evidently a "fake" and has been printed to suit the purposes of the enterprising Spaniard. It tells of the arrest of a banker at St. Petersburg, who eloped with a prominent young woman, leaving a deficit of more than five million rubles. The item states that he was arrested in London by an order of the Spanish ambassador, who received authority from Russia. The arrest was made as he was leaving a hotel to take a boat for America, and after his arrest it developed that he had also killed an officer while in Russia. The item states that he was taken to Spain and tried and convicted for manslaughter.

The game is by no means a new one.

HEADQUARTERS OF THE REESE-HAMMOND COMPANY WILL BE IN PITTSBURG.

The Reese-Hammond Fire Brick Company has moved its headquarters from Bolivar to Pittsburg, Pa. The company has always maintained an office in Pittsburg, the main offices being at Bolivar. The officers of the company recently came to the conclusion that their best interests would be best subserved by having the main office in Pittsburg. J. B. Hammond, William M. Wynn, I. L. Hammond, William Welsh, and Miss Katherine Short will hereafter be identified with the Pittsburg office. B. F. Reese, Ben R. Hammond and Miss Vesta McKelvey will remain in Bolivar and look after the company's interest there.

ANOTHER SECRETARY GONE WRONG.

The statement is made officially that E. T. Martin, former secretary of the Jefferson Brick company, Birmingham, Ala., a concern with eight brickmaking companies in the membership, was recently found short in his accounts to the amount of \$15,706.32. False entries, it is stated, were found on the books, and upon being confronted with the shortage, Martin is said to have admitted the same and stated that the money had gone across gambling tables in Birmingham.

The accused did not leave the country, and while not here right now, his whereabouts are said to be known. He has a wife and two children, the wife being wrought to a wonderful state over the disgrace. The Jefferson Brick company was organized in 1903, and Martin was given the position of bookkeeper. A year later he was elected secretary without bond and given the custody of all the accounts of the concern. His peculations began nearly a year ago, according to the story given out by a high official of the company. The "crap table" was first sought, and then in order to get back the various sums, larger amounts were taken of the company's funds in the effort to win back what had been lost. The denouement followed. Martin is a man of much education. He had the implicit confidence of the company and was never under suspicion until a few months since.

SEABOARD BRICK COMPANY BUYS 553 ACRES OF LAND IN CATSKILL.

Catskill, Feb. 24 —The purchase here to-day by the Seaboard Brick Company of New York city of 553 acres of clay and shale land owned by former Sheriff C. A. Post means the establishment of a building brick plant with a capacity of 300,000,000 brick annually.

Dawson Coleman of Lebanon, Pa., is president and A. A. Gery, president of the United States Brick Company of Reading, Pa., is vice-president of the Seaboard Company, which is capitalized at \$7,000,000. Delancey Nicoll of New York is director of the company.

DENOMINATED CONTINUOUS DECORATING KILNS TO BE INSTALLED.

Recently representatives of various potteries went to Monaca, Pa., to inspect continuous kilns installed at that place. These kilns are for decorated ware and it is claimed that ware can be taken from these kilns within five minutes after being placed within the kilns. The ware passes through the kilns and is taken out completed. It is claimed that the cost of burning is less than ten per cent of the present cost. Those who visited Monaca were well pleased with what they saw and the Sebring (Ohio) pottery decided to install the continuous in their pottery at once. Mr. Davidson, of the Sebring, was sent to East Liverpool with orders to purchase machinery for continuous kilns to be built as soon as possible. There is no patent on the new device, but the installing of the new style kilns is expensive. When the new kilns are in operation a rush order can be sent through the kilns and to the packing sheds within a few minutes.

CALIFORNIA SENDS MICE.

A bunch of five mice from California arrived unexpectedly and unheralded in Bucyrus, Ohio, a few days ago. Their arrival was as great a surprise to themselves as to their recipients. Four of the little fellows have taken up their abode in Bucyrus for keeps but the fifth has gone to the great beyond.

Several days ago a consignment of clay was received from California at the clay testing department of The American Clay Machinery company. The clay had been put in sacks and then boxed tight. Evidently the person who had packed the clay had spaded it up and dumped each spade-full in the sacks. In this way he must have spaded up a family of mice and sacked them before the little fellows knew what was happening to them. The sack being tightly boxed prevented escape and the whole family arrived by express in Bucyrus and was delivered at the clay testing room of the American company. When the package was opened and the chunks of clay were broken up for working the mice ran in all directions. One was killed but the others escaped. The mice were boxed up for over a week but probably had food enough in their nest to keep them from hunger.—*Ex.*

CEMENT PLANT TO COST \$1,750,000 FOR ST. LOUIS.

D. A. Marks, president of the Continental Brick Company of St. Louis, Mo., announced that a contract had been entered into between the company and certain eastern cement manufacturers, giving the eastern capitalists the privilege of erecting a modern mill, with a capacity of 2,500 barrels of cement a day, on ground owned by the brick company four miles west of Carondelet, at the junction of the Missouri Pacific and the Frisco and Rock Island railways.

The proposed mill is to be one of the largest west of the Mississippi river and will involve the investment of about \$1,750,000 before it is completed. Work will be commenced as soon as the weather permits, and the contractors have promised its completion before the end of 1907.

Representatives of the eastern firm have been touring the west and middle west in search of a desirable location for a plant. When they viewed the ground of the Continental Brick Company they came to a quick decision, stating that St. Louis had advantages in manufacturing and distribution more than equal to those of any other point in the west, or possibly in the entire United States.

The ground, which has been leased, consists of 150 acres near Shores switch, at the junction of the Missouri Pacific and the Frisco, and is lined with limestone deposits for a known depth of 150 feet. This furnishes a practically inexhaustible supply of material. The Continental Brick Company has skinned the clay for a depth of 9 feet or about twenty-five acres. The rich limestone is exposed in this tract, which is calculated to furnish material for at least fifty years.

The board of directors of the Continental Brick Company is composed of David A. Marks, president; Otto C. Oehler, secretary; George Beck, Henry C. Petring and George H. Petring.

FELT PARALYSIS COMING ON AND BLEW WHISTLE FOR AID.

Believing that he was going to die from paralysis, Harry Hanson, of No. 605 Ohio avenue, Trenton, N. J., an engineer at the Keystone pottery, resorted to a novel scheme of summoning aid. He grasped the whistle cord, blew the plant's whistle until aid reached him and then became unconscious. The employes of the entire plant turned out so quickly that a panic almost ensued, all believing that there was a fire.

Hanson was found unconscious by his engine with the whistle cord still tightly grasped in his hand. He was removed to McKinley hospital and is not likely to recover. Hanson suffered a similar stroke some time ago and realized the next would probably mean his death.

AN OHIO COUNTY COMMISSIONER WANTS A CLAY BANK.

Lack of a shale bank has put W. F. Eirick, county commissioner, at Cleveland, O., in a temporary quandary concerning his recent proposal that the county use jail prisoners to make its own paving brick.

"I have gone into the inquiry thoroughly to find a brickyard for sale, but there seems to be an understanding among brick men. Everyone I have approached has put the price for his plant away beyond reason. One man, whose plant, figuring at the highest estimate, I know is not worth more than \$40,000, asked \$150,000. Others are like him. The only recourse is to start a new brickyard. But for paving brick, shale is necessary. I do not know of any shale banks on the market. The news of one would be the best I could hear just now.

"The saving to the county by such a brickyard would be more than is commonly understood. I have gone thoroughly into the law on the subject, and while a county cannot establish such a plant to compete directly with other manufacturers, it can make its own brick and also sell to other counties for public improvements only. But such public improvements would be enough to keep the plant busy the year around.

"The cost of such a plant should not be more than \$25,000. Of course, I do not believe in a convict working on the public road with ball and chain. But with a stockade around such a plant as I propose the esthetic objections should be satisfied. The labor organizations are with me on the matter; the only possible objectors would be the brickmaking firms who are charging us high prices for brick.

"I do not believe the taxpayer would find any fault if he knew the saving the scheme would contrive for him. But I do hope some owner of a shale bank will get into communication with me."

A. B. Lea, county surveyor, who has been in the brick business, figures that a saving of \$5 a thousand could be made on brick manufactured by convict labor. The county uses in a year 4,000,000 paving brick. The saving on Cuyahoga county brick alone would, therefore, be at least \$20,000 a year. A plant, though, of 50,000 brick capacity a day, could be run with the convict labor at the disposal of the county. The surplus, sold to other counties and possibly to the city, would, therefore, make the profit of such a scheme as Eirick proposes at least \$75,000 a year.

SAND OR LIME BRICK OR BLOCK NEWS

R. H. Worthley and C. Worthley have formed a partnership at Monterey, Minn., to manufacture cement blocks and tile.

The Norton Composite Brick Co., Norton, Nebr., have added to their equipment a tile making machine so that they can turn out cement tiling.

The Brillsford Artificial Stone & Tile Co. of Wilkesbarre, Pa., has been incorporated with \$100,000 capital stock to manufacture and sell stone and tile.

The Hampton (Ia.) Cement Construction Co., is figuring on enlarging and engaging in the cement tile business. Geo. E. Sargent is the manager of the company.

The Iowa Granite Brick Company, Cedar Rapids, Iowa, is making improvements to its plant so as to keep up with the increasing demand for their sand lime brick.

The Malcolm-Johnson Brick Co., Valhalla, N. Y., has purchased land and will install machinery to make 10,000 brick a day. The colors made will be red, yellow and sand.

The Madison (Ga.) Concrete Company is a new industry that will furnish all kinds of concrete, brick and tile. The works of the Bond-Wiliford Flouring Mill near the Georgia Ry. depot.

Work has been started on the new sand lime brick plant at Ballston, Spa, N. Y., which is in charge of Edwin G. Kastenhuber of Schenectady, N. Y., who represents the owners. The building will be 80x100 feet.

The Menominee (Mich.) Brick Co. has finished its season's run and shut down after a most successful year. The plant will be repaired and the machinery overhauled. The company has several large orders to fill soon as it starts up.

The Grand Rapids (Mich.) Sand Lime Brick Co. has been organized, a large tract having the requisite quality and quantity of sand has been secured and the erection of a factory, 50x160 feet in area will be built at once. There was no bonus asked for, no free site or exemption from taxes.

The machinery at the sand-lime brick plant of the Hummelstown (Pa.) Brown Stone Co. was started this month by Miss Walton, daughter of A. K. Walton, the manager. Same will be run light for some time until machinery all has perfect bearing. It required 250 horse power to operate the plant.

Gov. Sanchez, for the state of Chihuahua, Mexico, has granted to Alberto Heredia or a company which he may organize, a concession to manufacture in Chihuahua, building blocks and bricks to be made out of sand and lime. The plant must be in operation within six months and completed within one year and is exempt from taxes for ten years.

Rush E. Evans, division manager of the Strawboard department of the United Box Board & Paper Co., at Dayton, Ohio, is associated with the Dayton capitalists in the building of a sand lime brick plant on bank of the canal south of the city. Fifty acres of land which contains sand and gravel has been purchased and the plant will be started soon as the canal property is improved as to the shipping.

The state auditor of Mississippi granted exemption from Texas to the Minter City Tile & Brick Works, a concern organized to make drain tile to be used on Delta plantations.

MISCELLANEOUS ITEMS

The Badger Pressed Brick Co., Fond du Lac, Wis., will erect a brick making plant near Oakfield.

E. A. Hill, Custar, Ohio, has recently purchased a brick and tile works and will be in the market for improvements for same.

The Hazelhurst (Miss) Brick Co. has changed hands and will be operated and enlarged by the new owner, Mr. J. L. Harris.

R. Z. Ingram, of Gonzales, Texas, and D. L. Joynt will arrange to establish a plant to develop the clay deposit near Waxahachie, Texas.

The Beaumont (Tex.) Brick Co. are operating their plant night and day in order to keep up with their orders, making 50,000 brick at each shift.

The Western Brick Co., Hastings, Nebr., has been reorganized under the name Western Brick & Supply Co. A. H. Farrens is the manager.

A large new brick yard to be called the South Side Brick Yard, is to be located on E. 14th St., Manchester, Va. Benjamin Davis is the proprietor.

The Ohio Ceramic Engineering Co., Cleveland, Ohio, has increased its capital stock from \$150,000 to \$300,000, \$200,000 being 7 per cent. preferred stock.

H. Dorman has sold his brick works at Port Haney, B. C., to H. Burnet, 34 13th Ave., Vancouver, B. C. Mr. Burnet will operate the works at their fullest capacity.

James R. Ryan, of Philadelphia, has been appointed superintendent of the Hamburg (Pa.) Vitrified Brick Co.'s plant and has already taken charge of the plant.

The plant of the Banner Clay Works at Edwardsville, Ill., which recently burned to the ground, will be rebuilt at once. M. M. Bushong is the superintendent.

Strain & Chrissinger, Mt. Pleasant, Iowa, have sold the land upon which their plant stands and will seek a new location either in that city nearer the railway or elsewhere.

Reports from the builders of the Burke Brick Co., at Ft. Smith, Ark., are that the plant will be ready to turn out pavers by the first of June. The foundations for the buildings are all completed.

The Seaboard Brick Co., organized in New York City with \$7,000,000 capital stock, has bought a 550-acre farm at Catskill, N. Y., and will build a plant there that will turn out 300,000,000 brick a year.

The Castanea (Pa.) Brick & Tile Co. is now fully organized with \$125,000 capital stock. The officers are W. B. Holloway, president; C. A. Holloway, vice-president, and Dr. L. H. Holloway, secretary and treasurer. The latter lives at Salona, Pa.

The Black Dolly Fire Clay Co., Salt Lake City, Utah, has been incorporated with \$25,000 capital stock. The plant will be at Pleasant Grove. The officers are Israel Cole, president; F. A. Cole, vice-president, and Harry S. Harper, secretary, treasurer and manager.

The Tennessee Brick & Mfg. Co., Chattanooga, Tenn., has been incorporated with \$50,000 capital stock. The company has bought a site on the Tennessee river near Citico. the incorporators are C. E. James, R. B. Henderson, M. B. Ochs, William Parks and M. H. Clift.

The American Sewer Pipe Co. has advanced prices on all sewer pipe three per cent.

The Alsey (Ills.) Brick & Tile Co. have organized a new company called the Alsey Promoting Co.

The Morgan County Brick Co., Denver, Colo., has been incorporated with \$8,000 capital stock by Wm. B. Robinson, F. T. Robinson and Goldie W. Robinson.

The Steelton & Harrisburg (Pa.) Brick Co. have declared their 13th consecutive annual dividend, this year it being 6 per cent. They will enlarge the capacity of the plant.

The land on which the Stanley (N. C.) Brick Co.'s plant is on has been sold by Jacob Jenkins to W. E. Morrison, of Statesville, who will place an up-to-date plant on the property at once.

The Puritan Product Co., Boston, Mass., has been formed with \$25,000 capital stock to deal in clay lands. W. J. Champion, of Roxbury, is president and F. L. Mitchell, of Dorchester, is treasurer and secretary.

The Barron Brick Co., Weston, Ontario, will build a brick plant with 150,000 brick daily capacity. 156 acres has been purchased from two estates and the machinery purchased. A. F. Brown, of Chicago, is president of the company.

The Northwestern Drainage Construction Co., Bancroft, Nebr., has filed articles of incorporation and a tile factory for the town is assured. C. J. Lenander is president, J. H. Welp secretary, Dr. C. M. C. Walters treasurer, and W. J. Anderson superintendent. J. J. Warrick will be manager of the tile drainage.

The Wadsworth (O.) Brick & Tile Co. has increased its capital stock from \$30,000 to \$75,000.

The Terpening Brick & Tile Co., Farmington, Ark., are in the market for an engine of about 50 horse power.

The Waco (Texas) Pressed Brick Co. has been organized to make 60,000 brick daily. Machinery has been purchased. D. L. Joynt, South Bosque, Texas, is in charge.

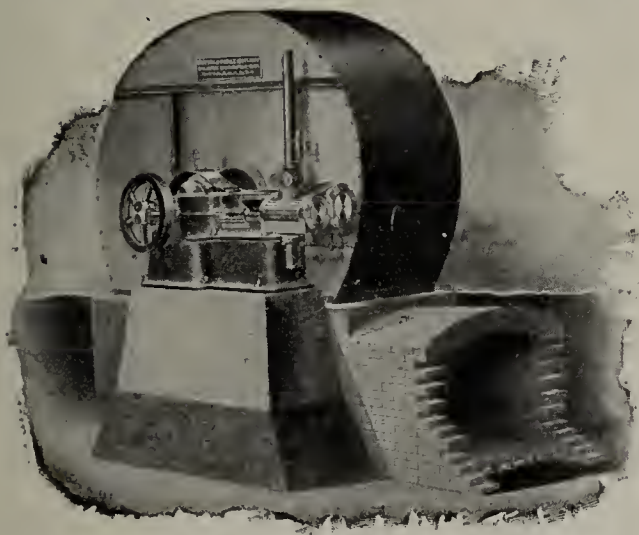
At a meeting of the stockholders of the Bangor (Maine) Brick Co., it was decided to increase the capital stock to \$50,000. The company has acquired several clay deposits and is preparing to double its present capacity in order to meet the demand.

The Altamaha (Ga.) Brick & Tile Co. which was organized and built a plant in 1905, will make extensive improvements to its plant, making 80,000 brick daily. They will put in additional engines, brick machinery, steam shovel, dryer and kilns. W. H. Roberts, of Theo, Ga., is the manager.

The Indian Creek Brick Co. has been incorporated with \$150,000 capital stock and will build a plant in Marshall county, W. Va. The incorporators are James J. Terhune, Henry G. Wolcott, P. B. Jennings, all of Brooklyn, N. Y., E. W. Foster, of Central Park, L. I., N. Y., N. L. Malmros, H. L. Robinson and W. G. Smith of New York.

The Ardmore (Ind. T.) Brick & Tile Co. has been organized with \$25,000 capital stock and will take over the Cathey Brick Works. Machinery has been ordered for making dry pressed brick. J. B. Spragins is president, J. R. Rennington vice president, P. C. Dings secretary and treasurer. The directors are the above and Mike Gorman, R. A. Fox and Lee Cathey.

Buffalo Waste Heat Dryer.



"Buffalo" Waste Heat Fan Direct Connected Engine
Bottom Horizontal Discharge

The first **WASTE HEAT DRYER** bore the name "BUFFALO." Economy is the watchword and in the third of a century since we began solving drying problems, there has been steady engineering progress.

"**BUFFALO**" **WASTE HEAT FANS** take the **WASTE HEAT** from the kilns and deliver it to the drying chambers, which can be automatically kept at any temperature and humidity. "BUFFALO" **FANS** have water-cooled bearings when necessary.

APPLICABLE TO BRICK, TILE AND TERRAZZOTA PLANTS.

Our thirty years of success is due to a constant study of clays.

Write, stating requirements, and ask for catalog.

BUFFALO FORGE COMPANY, BUFFALO, N. Y., U. S. A.

CANADIAN BUFFALO FORGE COMPANY, MONTREAL, CANADA.

A factory to manufacture patented culvert pipe will be erected at Galion, Ohio, by local capitalists. Employment will be given to 100 men.

R. Remp, Dresback, Minn., is closing out his brick business and the yards will be idle this year unless the Potter estate concludes to run the yard.

It was noted in the last issue that the Bessemer (Ala.) Brick Co. was sold; since then Messrs. Jay and Holt have bought the plant. The plant is being enlarged.

A new brick factory will shortly be erected at Torreon, Mexico, in which a large number of Saltillo capitalists are interested. Harry Scholfield, of Saltillo, will be the general manager.

The Central Kentucky Brick & Tiling Co. was incorporated in Lexington, Ky., with \$15,000 capital stock. Among the incorporators are B. C. Hagerman and ex-Senator C. J. Bronson.

It has been learned that the Dider-March Co., of New York, who purchased the clay manufacturing plant of Adam Weber's sons near Perth Amboy, N. J., will shortly build a large addition to the plant.

The Imperial Brick Mfg. Co. has filed articles of incorporation at Oakland, Cal., with \$200,000 capital stock. The stockholders are B. Kelsey, Charles W. Jennings, J. H. Smith, J. L. Smith and John Buswell.

The Bippus (Ind.) Tile Co. has been incorporated with \$15,000 capital stock. They have taken over the plant which was run under a partnership by J. W. McCollum, Bradley Howenstine and M. G. Wright. The plant will be enlarged and a steam drying system added.

Duncan, Ind. T., citizens propose to build a large brick-making plant in that city.

Paul J. Robertson, Mt. Vernon, Texas., wants estimates in the installation of a brick plant.

The Mansfield Brick Co. has just been organized at Rockmart, Ga., with \$4,500 capital stock.

H. M. Baldrige, of Mt. Auburn, Ill., has practically decided to establish a tile plant at Onnawa, Iowa.

Van Cleve Bros. have leased the St. Clair Tile Works at Eaton, Ohio; and will run it to its fullest capacity.

Johnson Bros., at Clayworks, near Ft. Dodge, Ia., will double the capacity of their plant. The machinery is now being installed.

Sixty brickmakers employed by the Builders' Brick Co., at Chicago Heights, Ill., have been called out on a strike, closing down the yard.

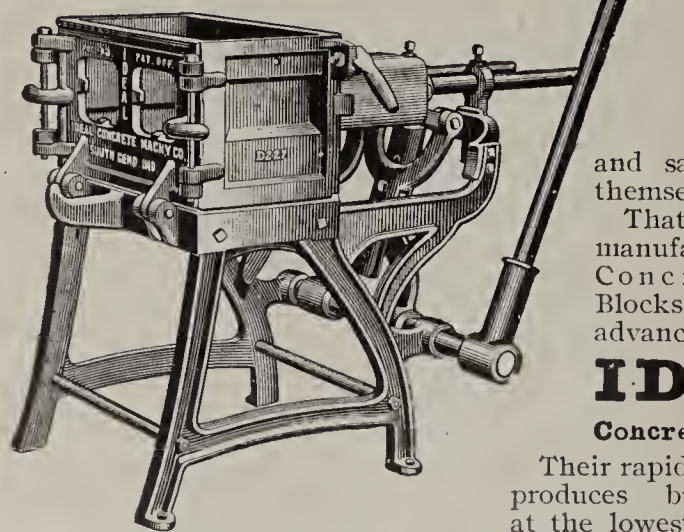
Ira C. Farney, who has been with the Scioto Fire Brick Co. at Sciotoville, O., for the past 20 years, has severed his connections and moved to New Mexico.

C. E. Martin, of Portland, Oregon, is at Spokane, Wash., trying to induce citizens there to invest in a \$25,000 brick making proposition at Lake Coeur d' Alene.

The Acme Roofing Tile Co., of Prospect Hill, Mo., recently filed articles of incorporation at Clayton, Mo., capital stock \$100,000. Leslie G. Sharp and other Chicagoans are the incorporators.

The Enid (Okla.) Vitriified Brick & Tile Co. has sold 3,000,000 brick to A. O. Campbell, of Oklahoma City. This will make it so the company will double the capacity of the plant.

HOW TO SELL BUILDING MATERIAL



The Ideal Concrete Block Machinery makes blocks at a cost that permits the underselling of all other building material.

Adaptable as to size of block and countless designs of face and natural stone effect.

Wonderfully simple. No chains, springs or gears.

Catalogue and fortune making facts on application.

Offer the builder a material absolutely weather and fire-proof; superior in appearance and durability to brick, stone or lumber; lower in cost than either,

and sales will make themselves.

That's why most manufacturers of Ideal Concrete Building Blocks are working on advance of orders.

IDEAL

Concrete Machines

Their rapidity of operation produces building blocks at the lowest possible cost. Embodiment the only principle (face down) permitting the practical use of rich facing material with less expensive material in back of blocks.

Ideal Concrete Mc'h'y Co.

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DIRECT HEAT

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**BANK SAND
GLASS SAND
ROCK, CLAY
COAL, ETC.**

All Mineral, Animal and Vegetable Matter.

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue W. C.

American Process Co.,

62-64 William St.

NEW YORK CITY

FOR SALE

One Hercules Steam Brick Machine, one 40 horse power gasoline engine. One semi-automatic side-cut brick cutter, made by Wallace Manufacturing Co., One Kells brick machine, lot of wheelbarrows and trucks. All in good condition. Address

W. H. VANDER HAYDEN,
Ionia, Mich.

BRICK AND TILE MACHINERY AT SACRIFICE

Where a country is tiled, factories are offered complete, or in part, Cheap. Have several Brewer Mills for sale, and others.

Engines, Boilers, Crushers, Drying Pipes, etc. If you wish to buy or sell write.

Brick and Tile Machinery
Secor, Ill.

FOR SALE.

An up-to-date brick plant. Capacity 35,000 brick Cheap fail and labor. Fine shipping facilities and an abundance of pure loose clay. Local demand takes almost entire output at good price. Will bear close investigation. Good reason for selling.

Address, WM. M. READ,
Princeton, Ind.

MACHINERY FOR SALE

One No. 2 Giant brick and tile, machine with dies for tile from 3 to 8 inches and side cut brick die. One Bunsing automatic tile cutter. One Bunsing automatic block and end cut brick cutter.

\$100 worth of repairs would put them all in first-class condition. Will sell cheap. Reason for selling, am using larger capacity. 1801½ Second Ave.
Rock Island, Illinois.

BRICK YARD FOR SALE.

Brick Yard for sale cheap. A bargain to the right party. Good market at hand. For further information address

BRICKMAKER,
Care Clay Record, Chicago, Ill.

FOR SALE AT A BARGAIN.

One Sampson Steel Company's Sand-lime Brick Press in good condition, used but a short time.

Address W. P. BRUBAKER,
Jacksonville, Fla.

FOR SALE

One H. Brewer & Co. Second-hand No. 5 Brick Machine.

One H. Brewer & Co. Stone Separating Crusher.
One 8 foot Pug Mill.
H. L. SWIFT
Riverside, Iowa

MACHINERY FOR SALE

The following machinery not used by us but all in good condition, will be sold at very reasonable prices.

One Penfield Single Mould Power Re-Press, capacity 10,000 a day.

Two Fate Company Bensing Automatic Side cutting tables. American Enamelled Brick & Tile Co.
1 Madison Ave., New York.

FOR SALE

20,000 Wooden Pillets, 32 inches by 10 inches, 5/8 inch lumber, legs 3 1/4 inches high, 1 1/4 inches thick. A bargain if taken at once. Address

JASPER ADAMS
Battle Creek, Mich.

FOR SALE

One Second-hand Four Mould Dry Press, in good order. One of the best presses on the market. Answer quick if you want it.

Address G. care Clay Record
Chicago, Ill.

PLANT FOR SALE.

FOR SALE—A first-class Brick and Tile Plant in northern Minnesota, capacity 50,000 daily. Good reason for selling.

Address, JOHN C. PETERSEN,
Pelican Rapids, Minn.

SITUATION, INVESTMENT OR LEASE.

Wanted, situation as manager or assistant of either Dry-Press or stiff-mud brick plant, by one who is thoroughly practical in all details pertaining to both the manufacturing and sales end of the business. Could also invest some capital, or would consider leasing a small up-to-date plant.

Address Ohio, care CLAY RECORD, Chicago.

ENGINES AND BOILERS

Cortis engines, 20x48, 18x36, 16x42, 12x36. Also 40 other sizes and styles in stock.

Boilers, Tubular, 84x18, 78x16, 72x18. Also 60 other styles and sizes in stock.

Send specifications of your requirements and we will make you a proposition that will interest you.

THE RANDLE MACHINERY CO.
1732 Powers St., Cincinnati, Ohio.

MANAGER WANTED

An experienced brick maker as superintendent and manager of a new brick plant, located on the Hudson River. River and rail shipments to New York. We are equipped with three machines, plenty of power, entire new equipment. Clay and sand within 600 feet of the machines, conveyed over trussel on cars to machines. Large sand bank from which abundance of sand can be shipped. Will require an investment from party wishing this position. Will give to right person absolute charge of plant. Address

C. R. SHEFFER, Pres.
Mechanicsville, N. Y.

FOR SALE.

Right and left-hand One, Two and Three Way Switches, of various gauges, radius and weight rail, at special prices.

THE ATLAS CAR & MFG. CO.,
Cleveland, Ohio.

FOR SALE—CHEAP—New and re-laying rails, 12, 16, 20 and 25 pound. For prices, address

ATLAS CAR & MFG. CO.,
Cleveland, Ohio.

FOR SALE

One Mascot machine with brick and tile dies. One end brick cut-off, style F, made by American Clay Machinery Co.

One hand side cut brick cut-off. These at your own price. Reason for selling have changed to a soft mud yard.

BLANCHARD BRICK & TILE CO.,
Blanchard, Iowa.

PALLETS FOR SALE.

FOR SALE—8,000 New All Steel Foot Pallets 34x10 inches. In good order. Can be had at a bargain. Address,

THE CLEVELAND CAR CO.
West Park, Ohio.

FOR SALE.

One Indiana road machine, belt; pulleys. One 30 horse power Boiler, used one year. 60 brick cars, damaged by fire, parts easily straightened, very cheap.

4,000 feet, one inch steam pipe for dry kilns. One Wellington brick machine, cost \$800, will sell for \$400 and load on cars. A man having \$2000 to put in brick and tile business can make a good deal by writing me.

C. S. BEADLE,
Saulte Ste. Marie, Mich.

POSITION WANTED

Young man wants position as manager or superintendent stiff mud brick yard. Small face brick yard preferred. Best references. Address

Pittsburg, care Clay Record
Chicago, Ill.

FOR SALE OR RENT.

A brick plant, with 11 foot vein of shale, burns a beautiful red or buff face brick and first-class pavers. Will make terra cotta or dry pressed brick.

Address Box 12,
Bidwell, Ohio.

PRACTICAL MAN WANTED

Wanted a practical man that can make an investment to superintend the installing of a plant and act as superintendant thereafter, address,

Practical, care Clay Record,
Chicago, Illinois.

BRICK AND TILE FACTORY FOR SALE CHEAP

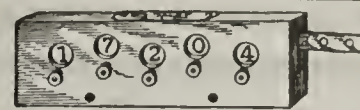
Good Sale for a brick and tile you can make. Located in a county seat. Almost new machinery. No. 10 Brewer Brick and Tile Machine. Everything in first-class repair. Reason for selling no experience. Plenty of clay and shale handy. Call or address

W. W. BLY,
Rushville, Ills.

FOR SALE CHEAP.

One Monarch Brick Machine No. 166, capacity 35,000. One Brewer Clay Crusher, one Sauder and Dump Table, four Brick Barrows, three Brick Trucks. About 16,000 Lath Pallets. Shafting and Pulleys. All the above are in good condition. Will sell all or part to suit purchasers. Address,

PFEFFER & SON,
Gettysburg, Pa.



Paper Joggers quoted.

R. A. HART, 41 White St., BATTLE CREEK, MICH.

No better made, cut iron
\$3 and \$10, 10

4 Wheel, \$3.00

5 Wheel, \$3.25

Guaranteed.

Sold by all dealers

FOR SALE OR TRADE.

Two Brick and Tile Plants in Iowa and Illinois, now running. Address,

THE KILN DOCTOR,
514 Fourth Street, Dayton, Ohio.

BRICK PLANT TO LEASE

Will lease my brick plant at Sutton to good party for one-third profit or one-fifth of the out-put. Plenty of good clay. Good market.

S. HUNZIKER,
Sutton, Neb.

STEAM SHOVEL WANTED

WANTED—A second hand steam shovel of small capacity. Answer quick.

The Hancock Brick and Tile Co.
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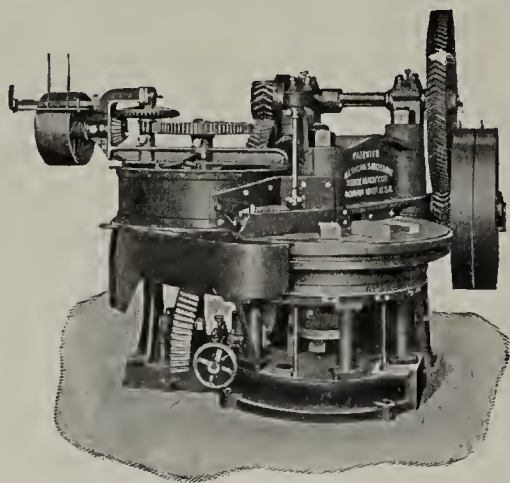
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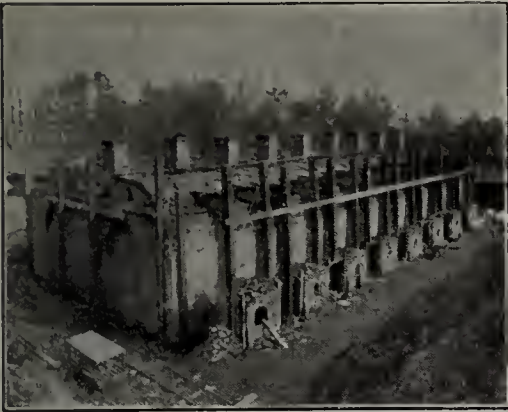
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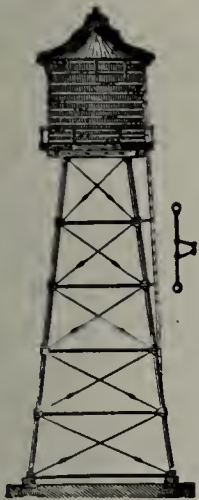
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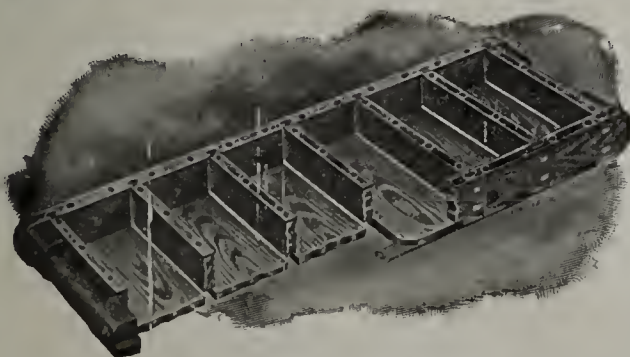
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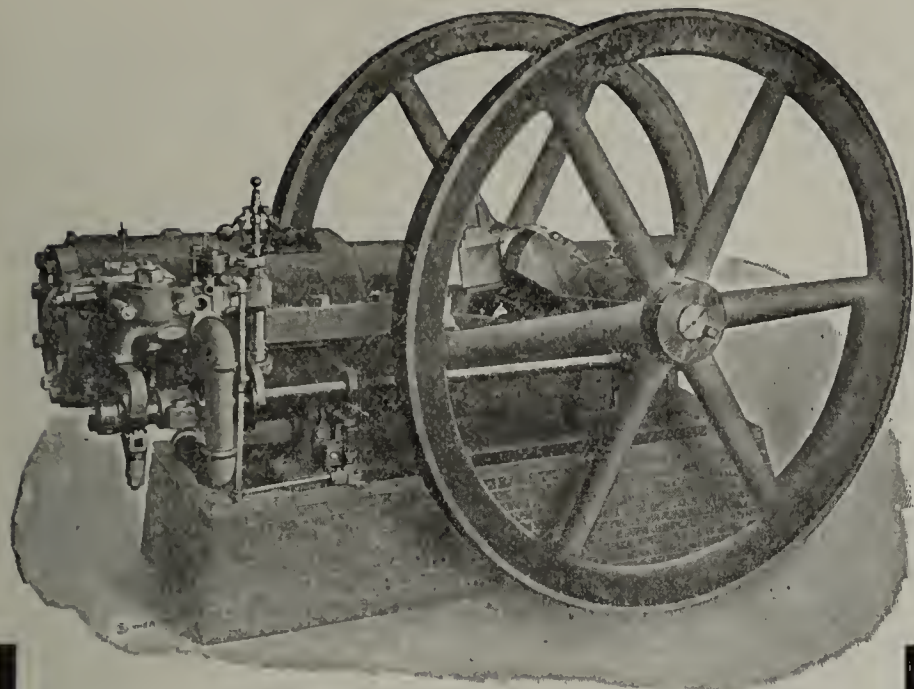
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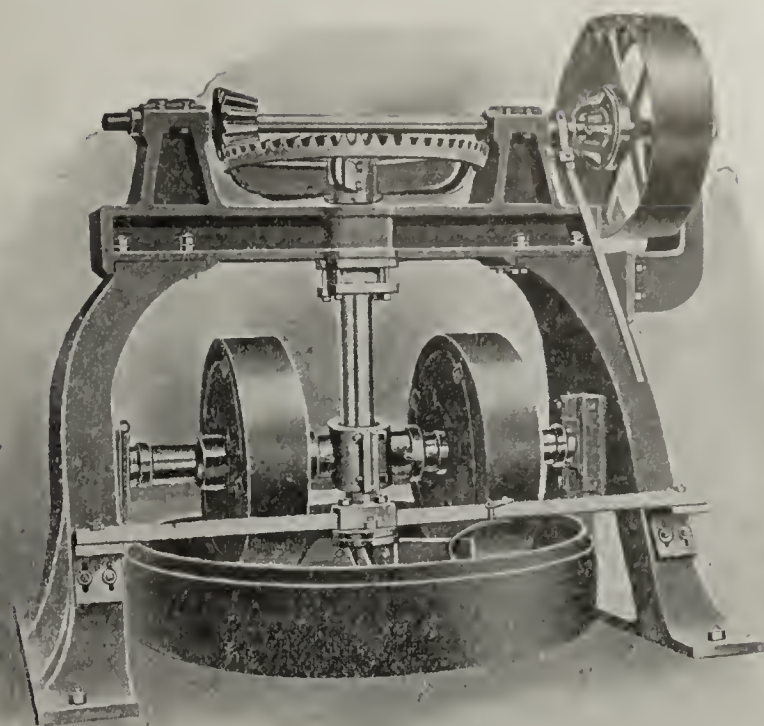


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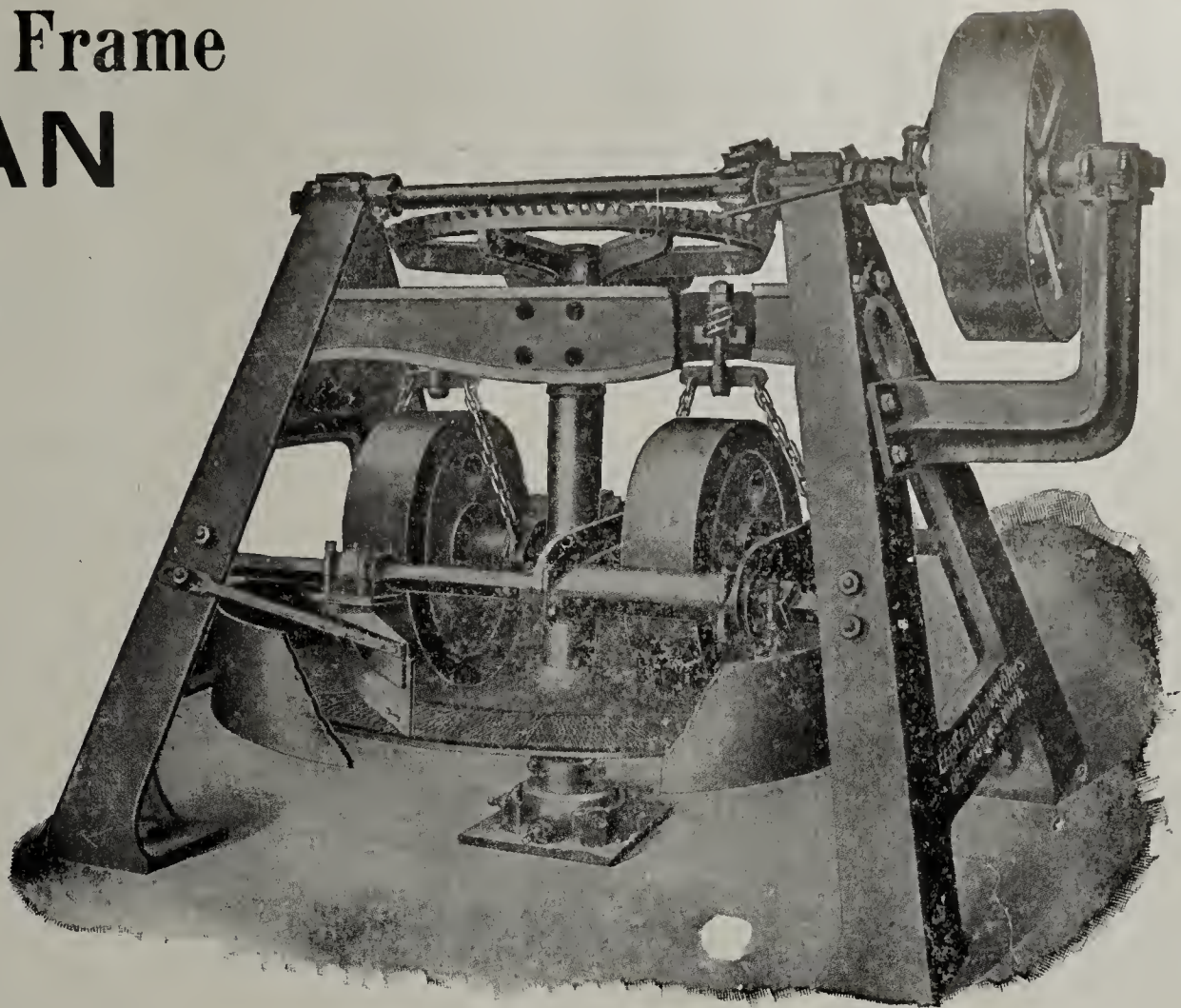
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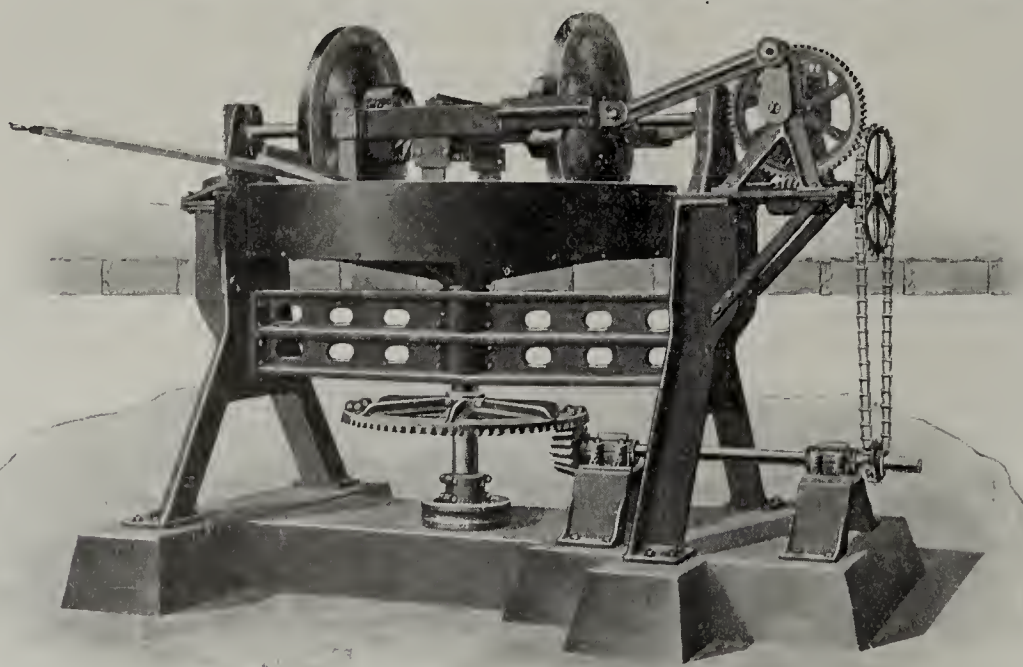
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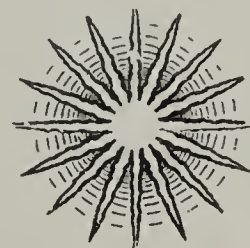
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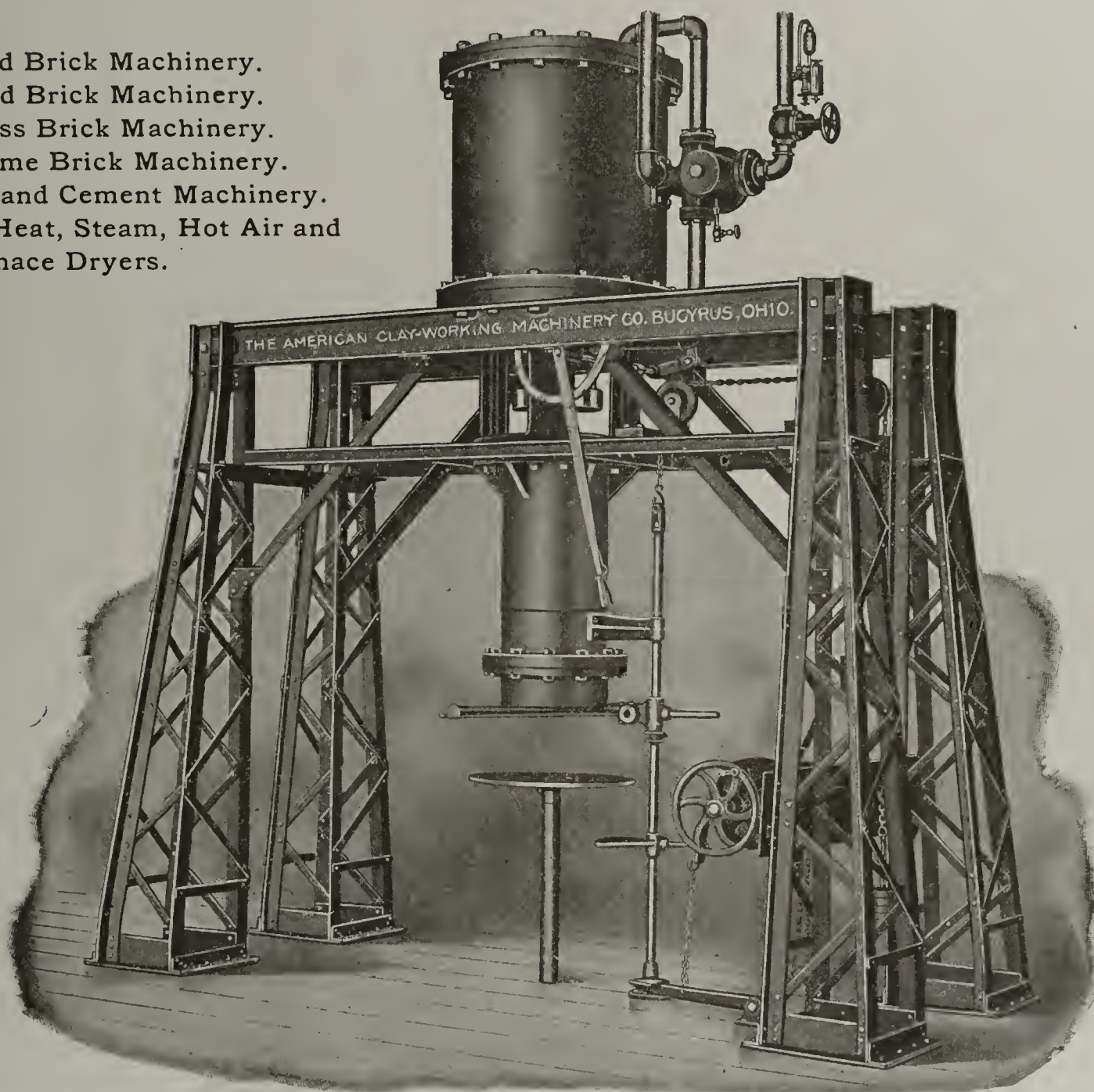
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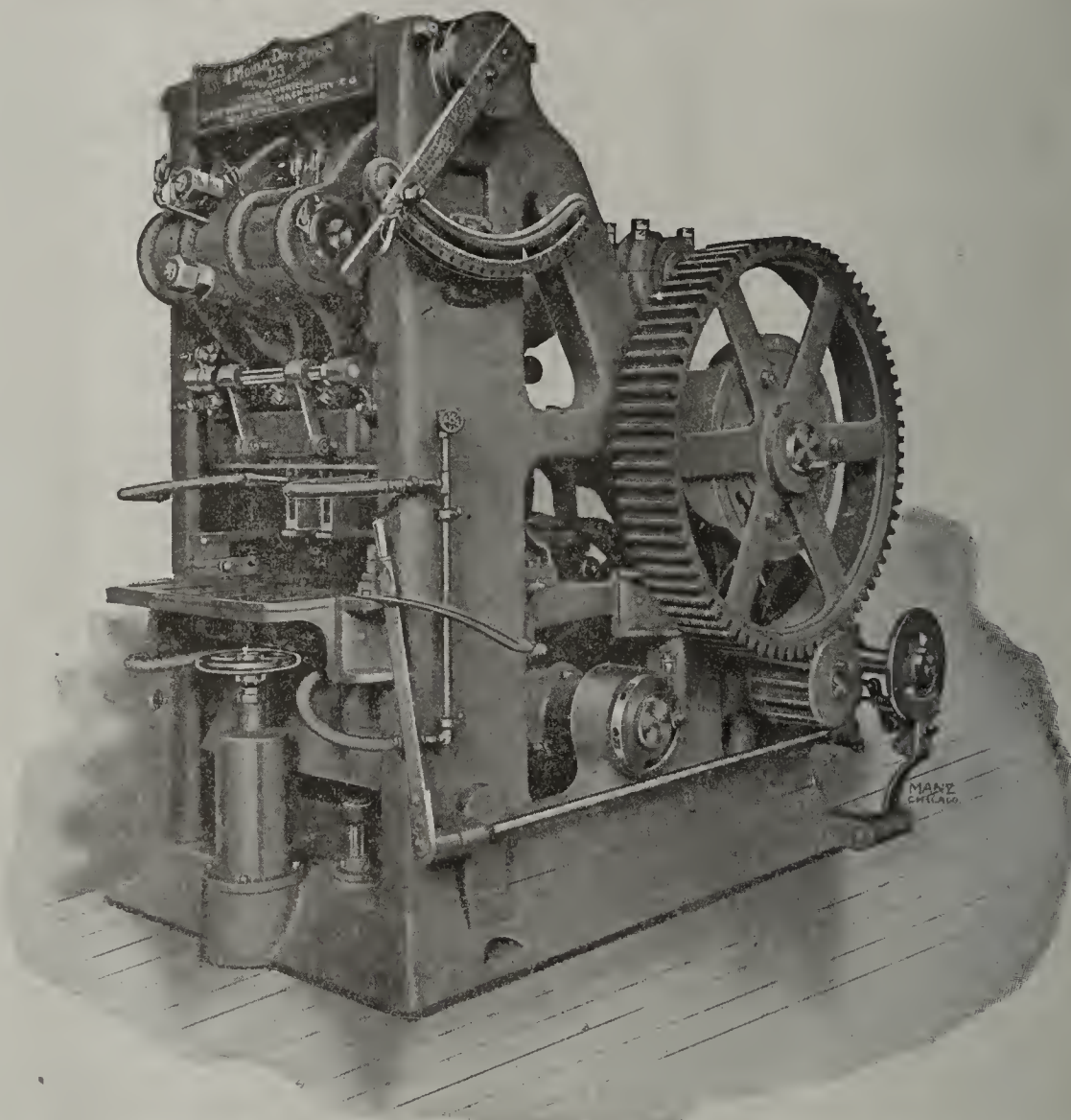
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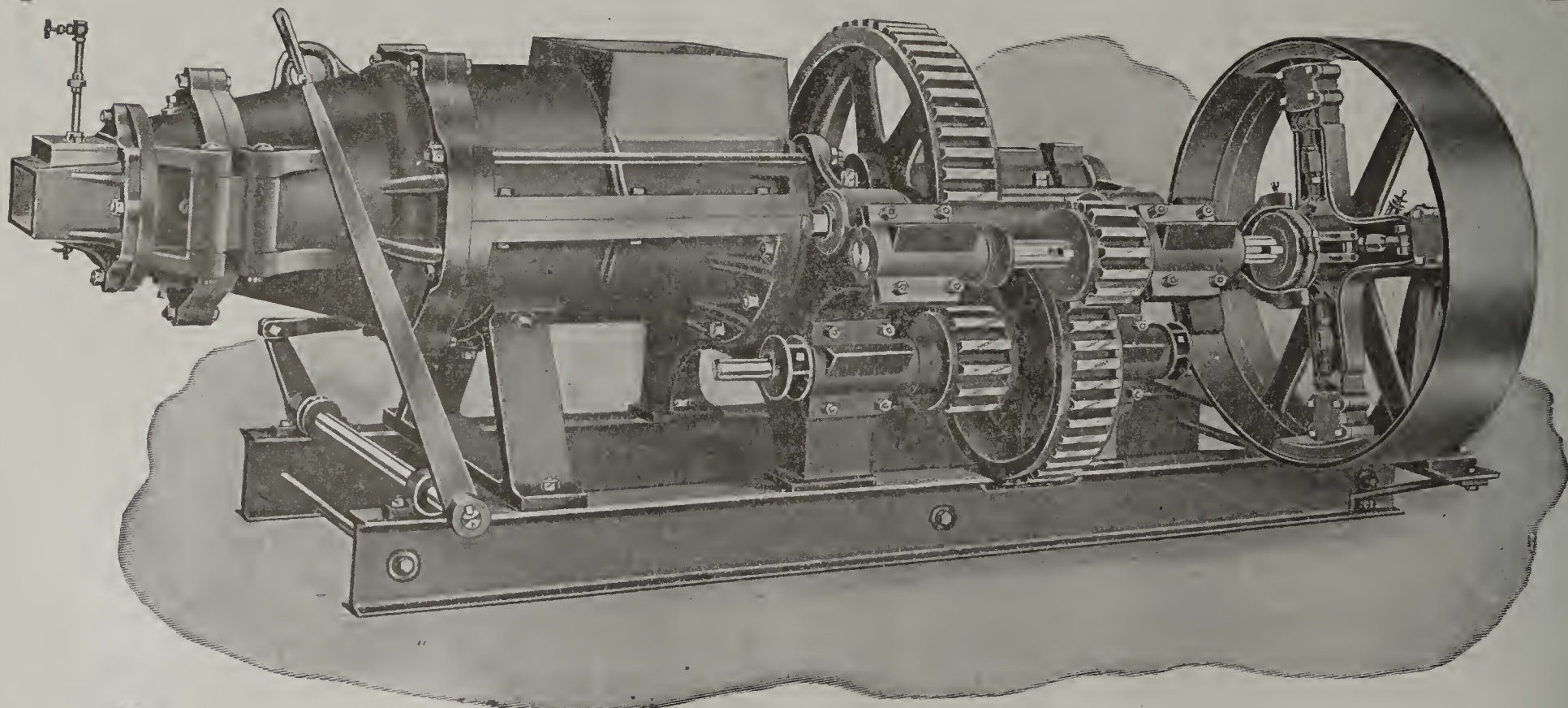


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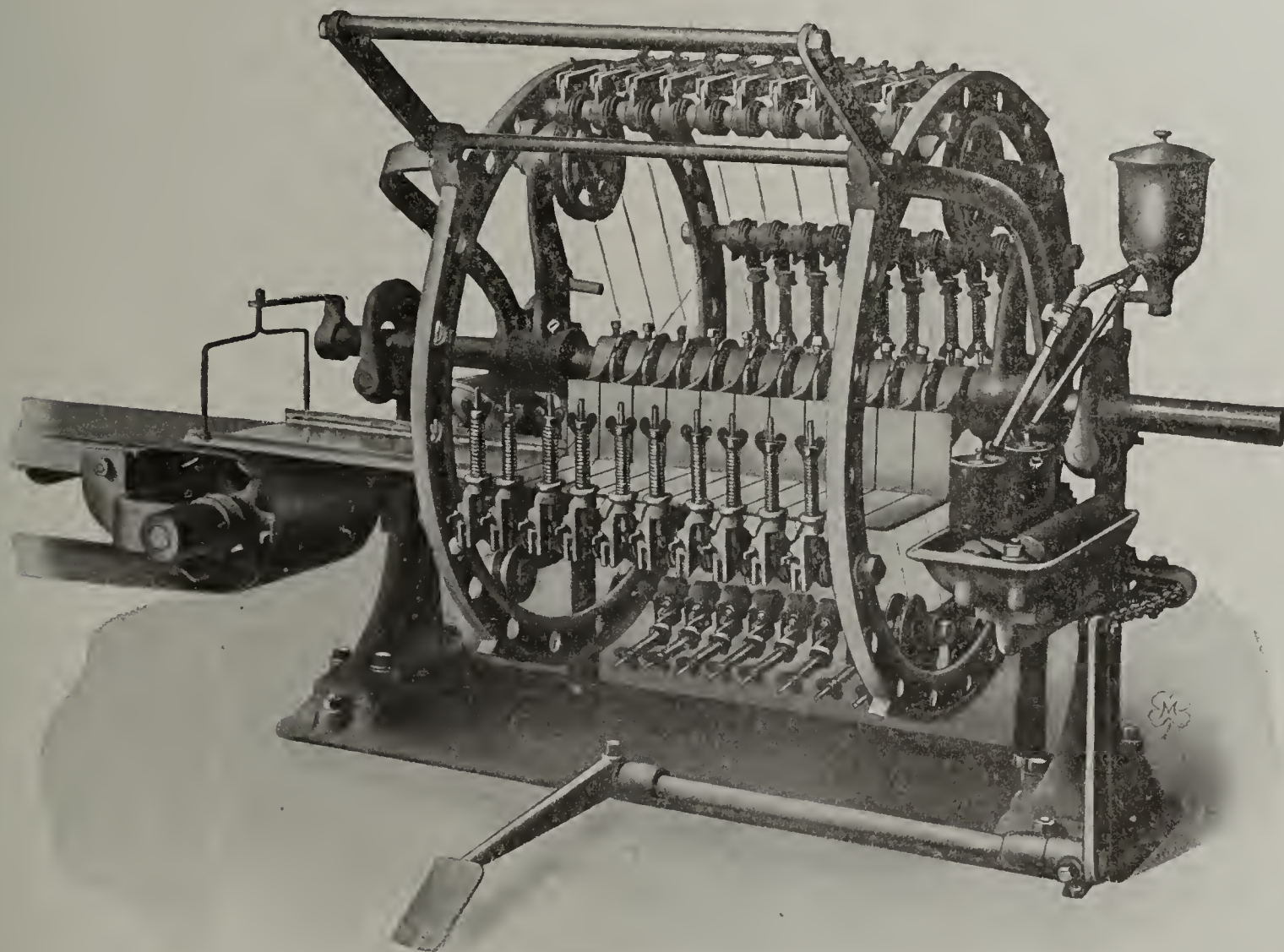


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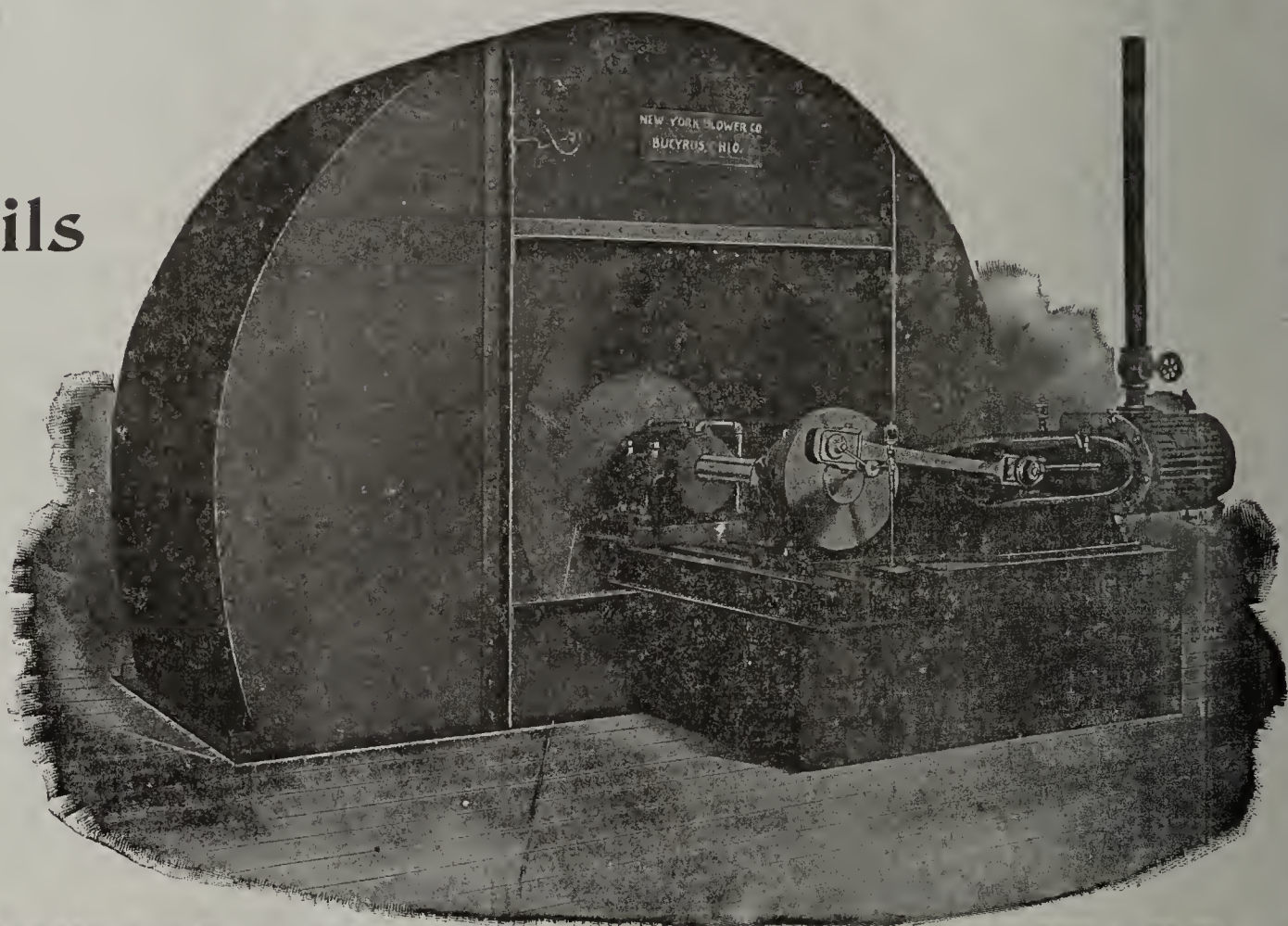
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NINTH FLOOR, CHAMBER OF COMMERCE
 PHONE MAIN 17

CHICAGO, Jan. 4, 1907.

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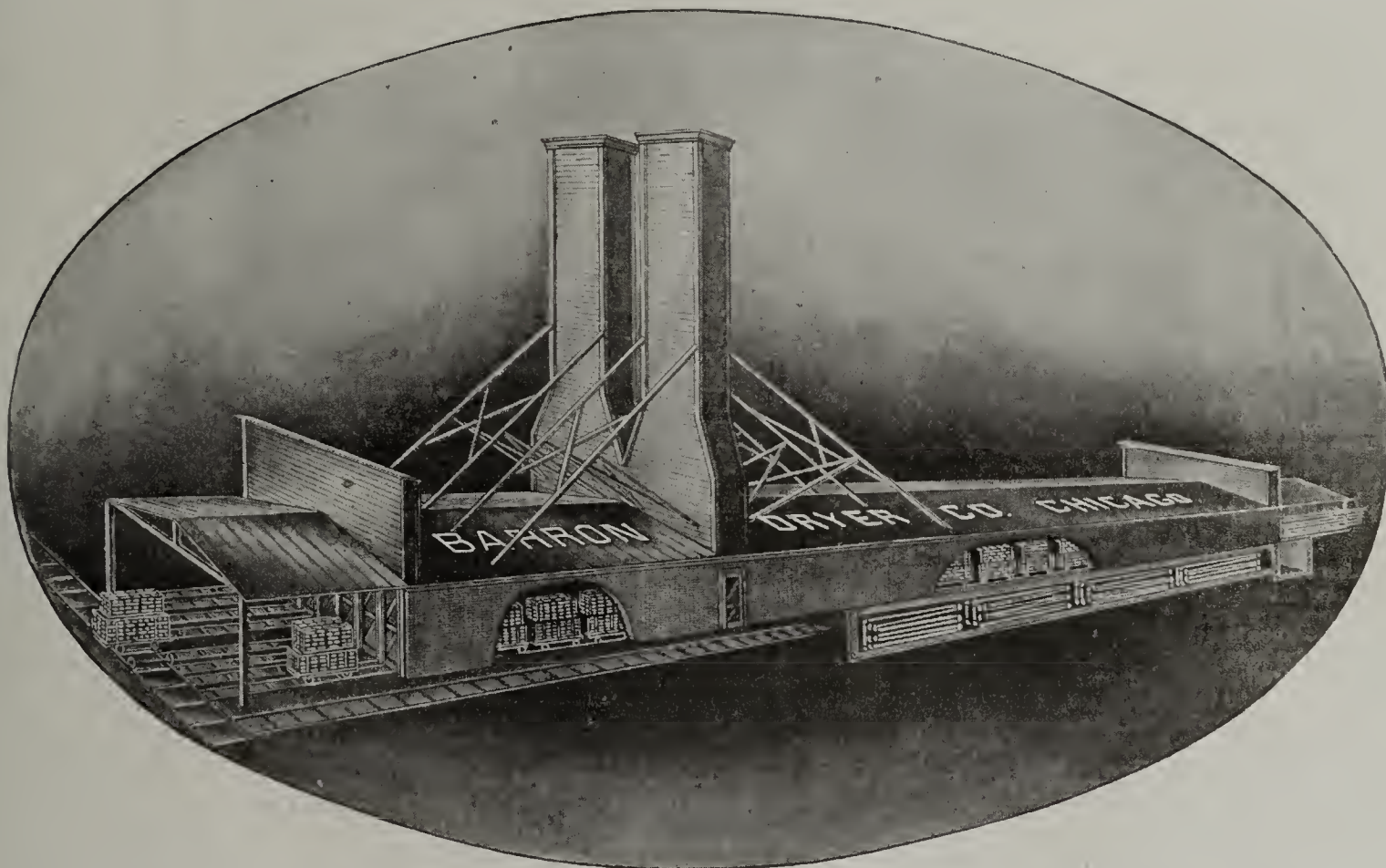
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It may be of interest to you to know that we have made on our Yard 17, in 1906, 52,551,400 brick, in 2,083 1-2 working hours, and have dried them satisfactorily on your 18 track dryer.

Very truly yours,
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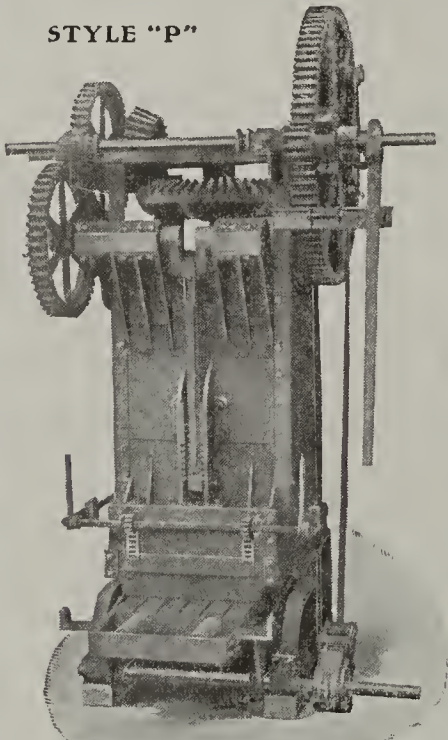
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THE "MARTIN" HAS STOOD
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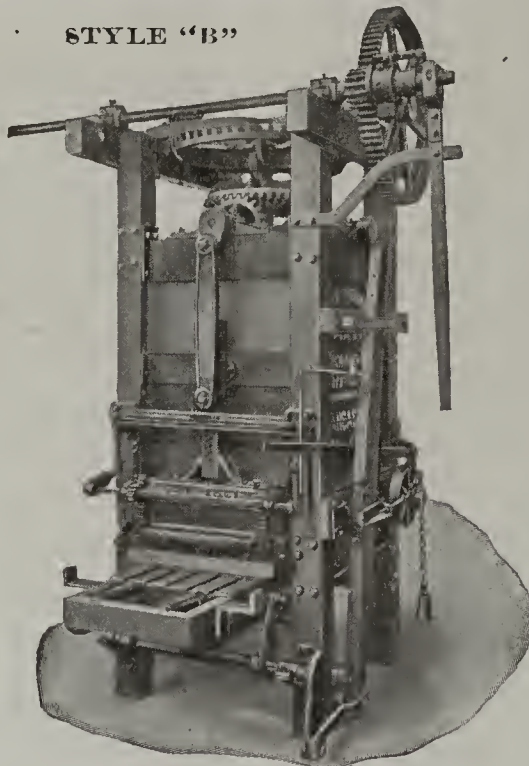


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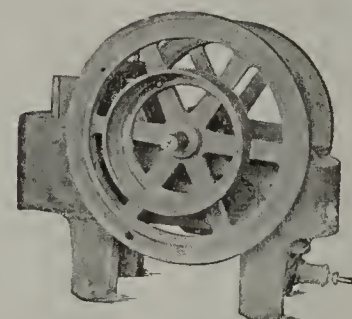
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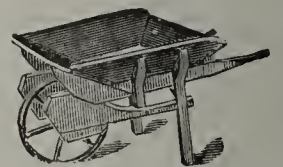
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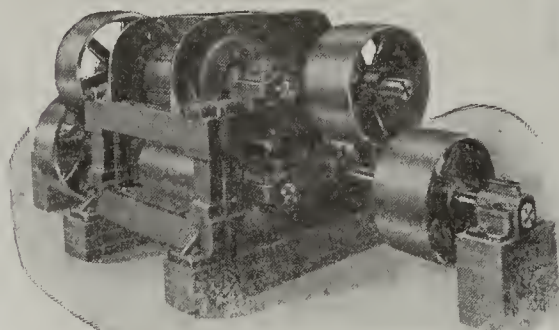
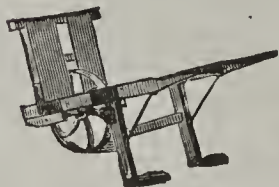
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PATENTED

February, 22d, 1898, No. 599509
October 10, 1905, No. 95520
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This Dryer, and the design in arranging it, are under the protection of the United States Government by virtue of patents granted. Patents have also been taken out in all the principal foreign countries. We are the sole owners and control these important patents and have authorized NO ONE to manufacture or sell the "MARTIN"

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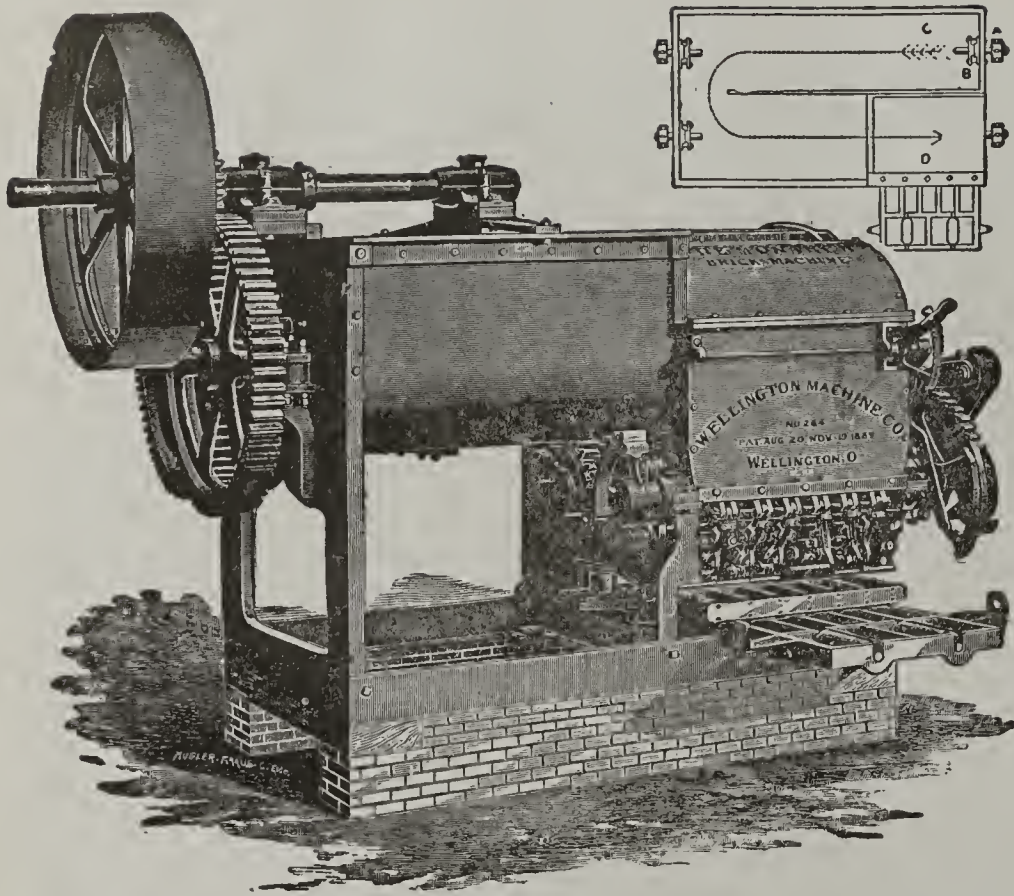
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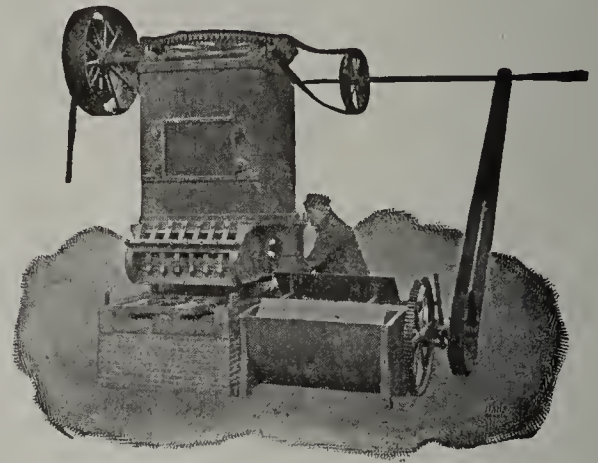
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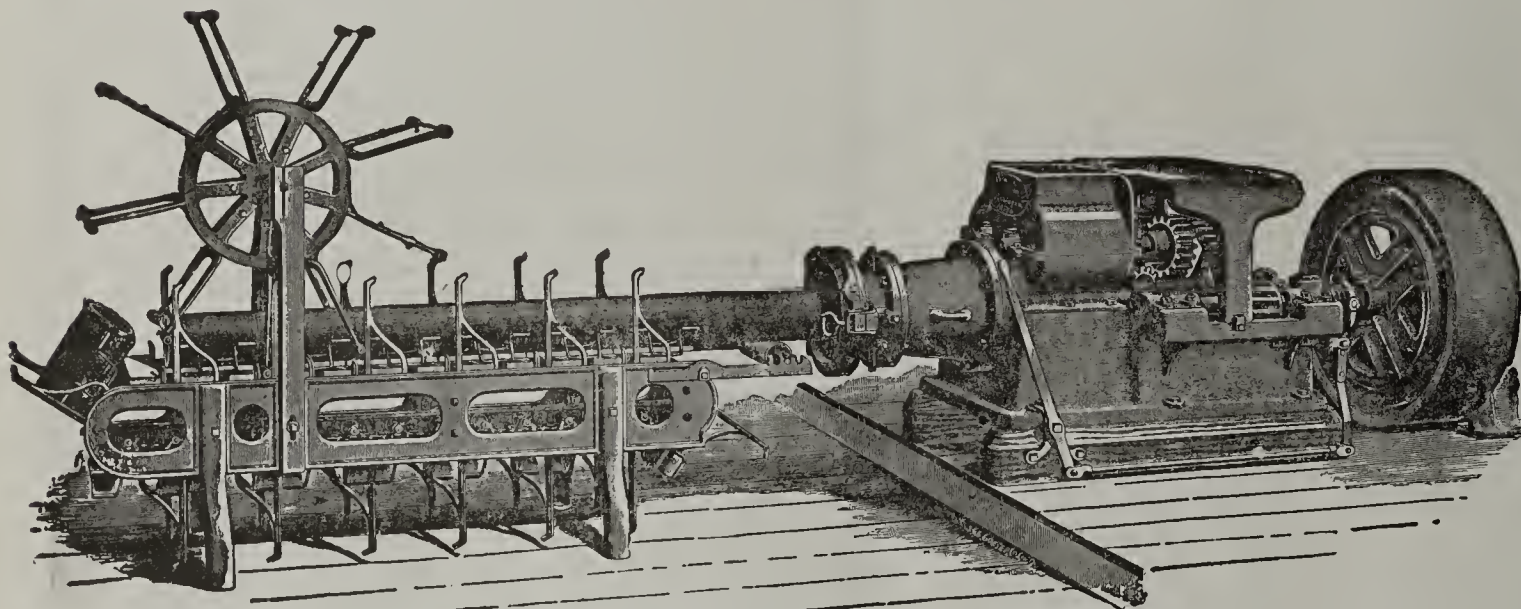
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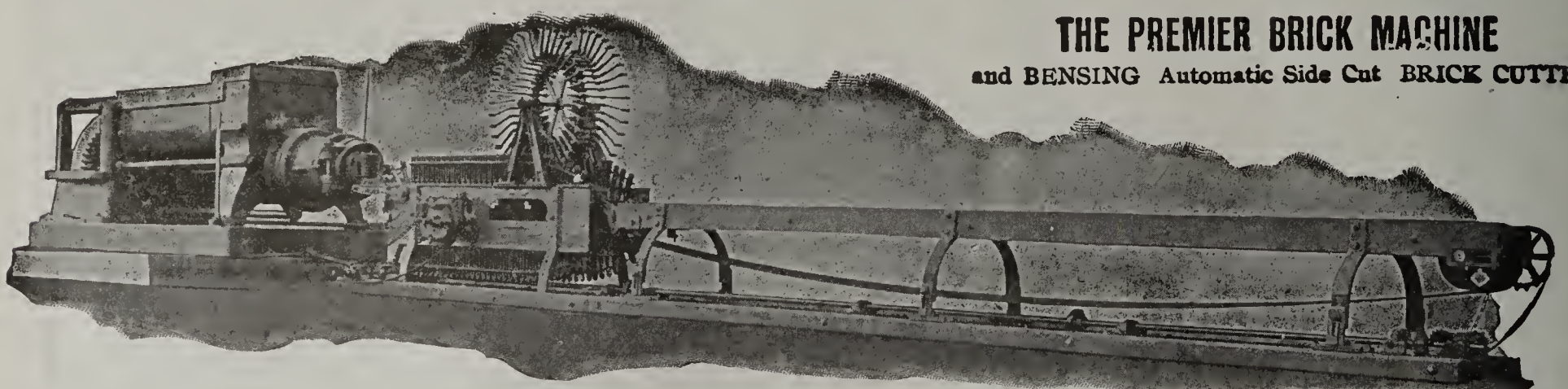


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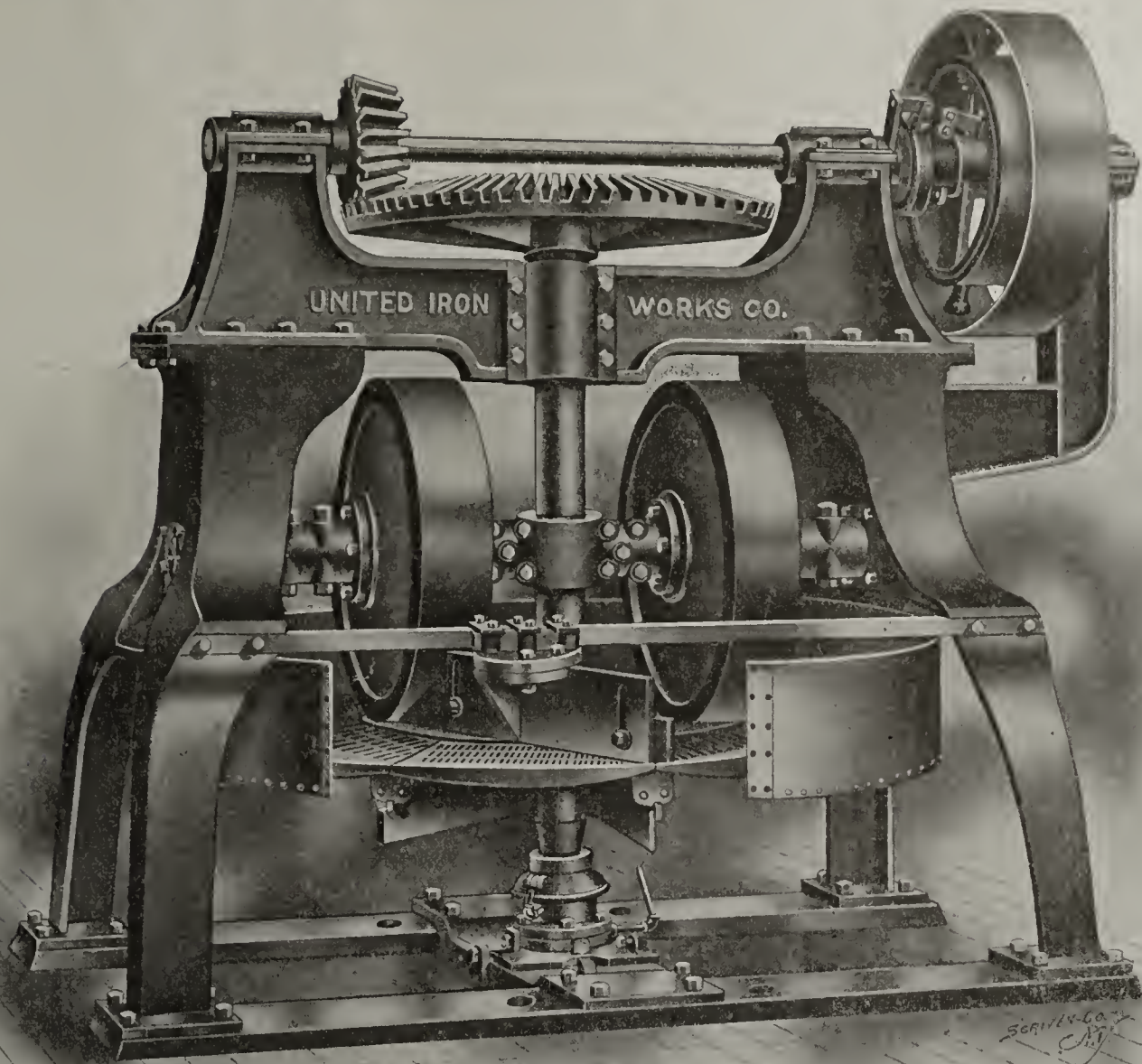
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We have a full line of Clay-Working Machinery, sand mold brick machines, auger brick and tile machines, Automatic side and end cut tables, dies, molds, barrows, trucks, sanders, represses, pug mills. *The only down cut, reel side brick cutter on the market for cutting face brick that do not require repressing.* We can guarantee to make you a better face brick with this cutter than you can get from any other cutter on the market.

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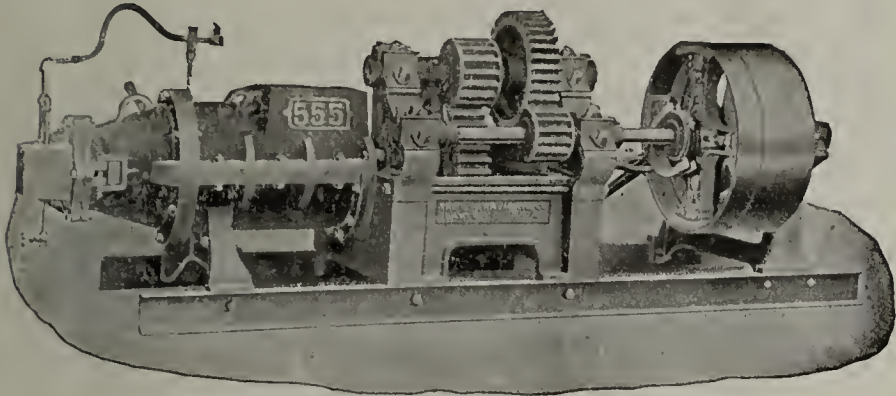
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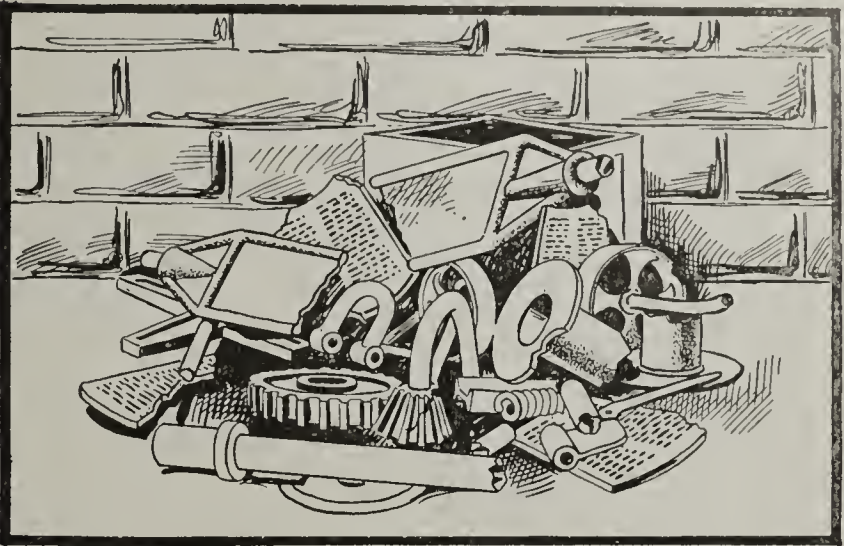
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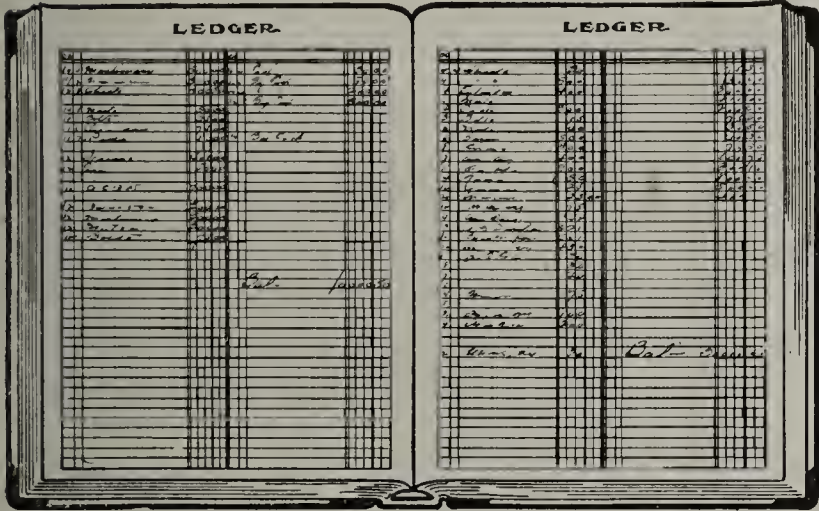
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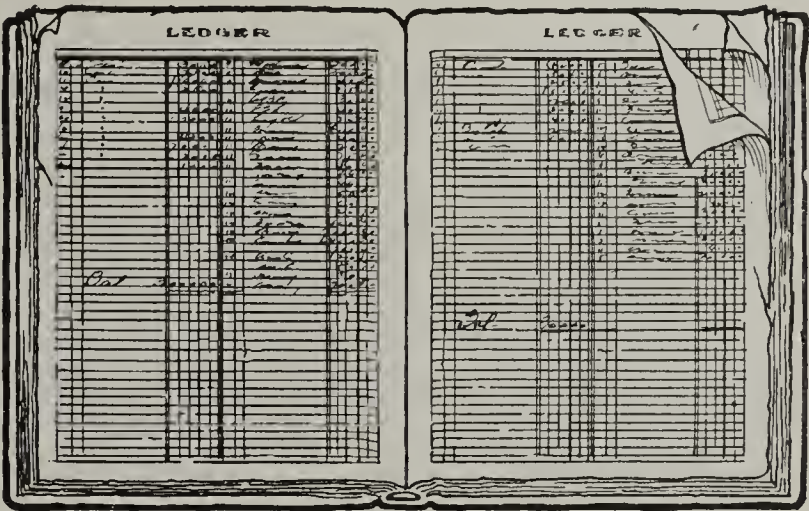
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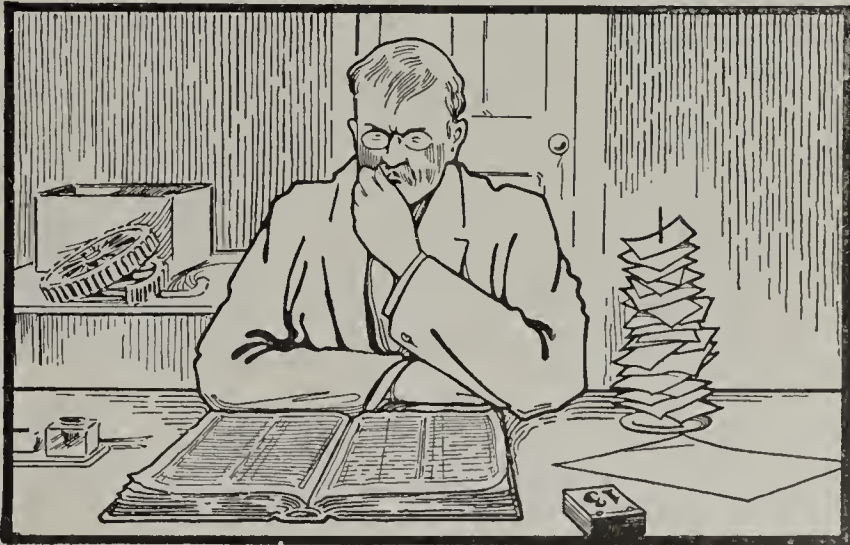
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BOYD QUALITY

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NO EXPERIMENTING

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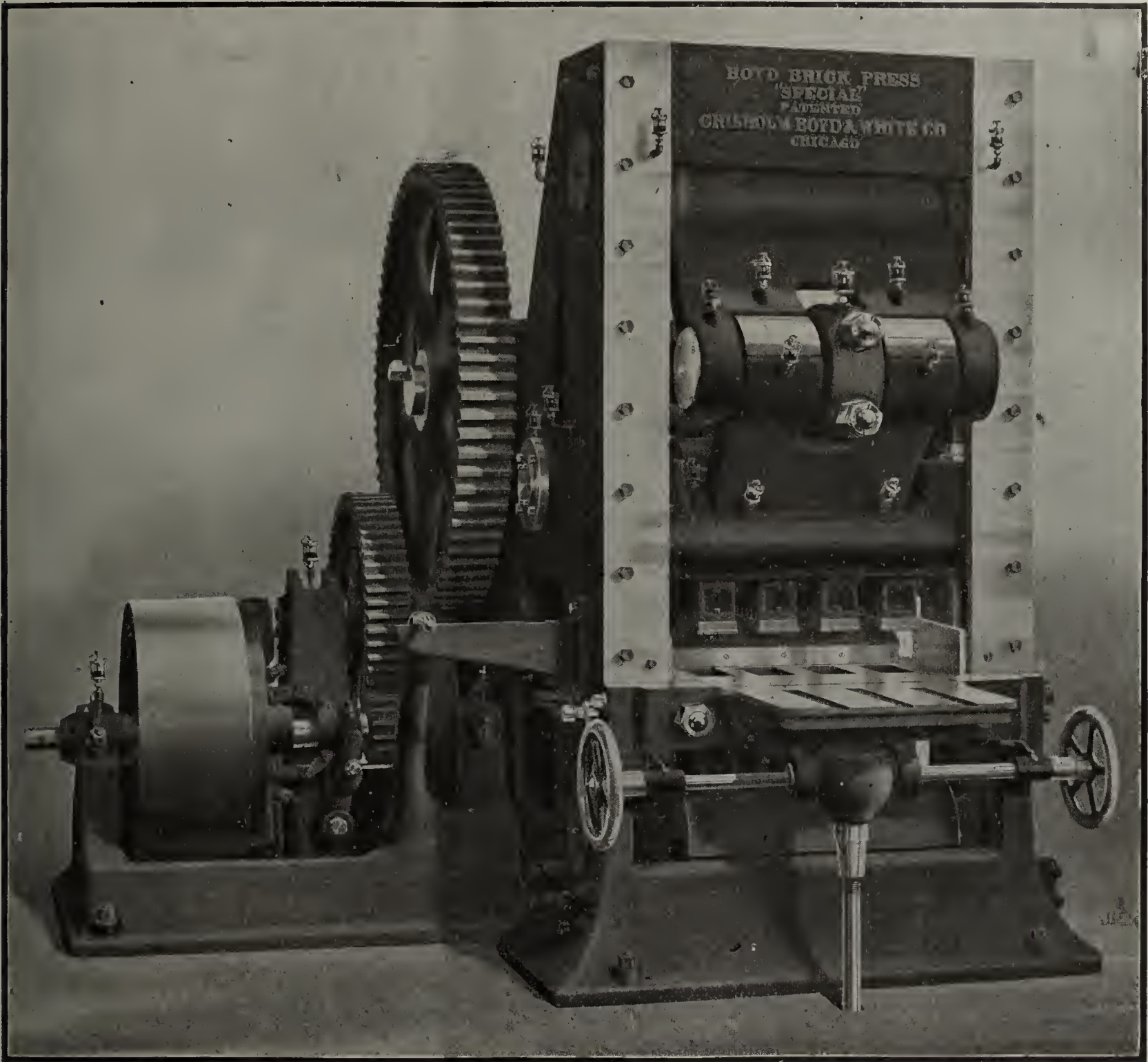
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THE BOYD BRICK PRESS

FOUR - MOLD "SPECIAL"



THE BOYD BRICK PRESS exerts greater pressure, holds it longer, puts more clay into brick, and makes stronger brick than any other Brick Press made. Especially adapted for working shales, and is the only successful machine for making fire brick.

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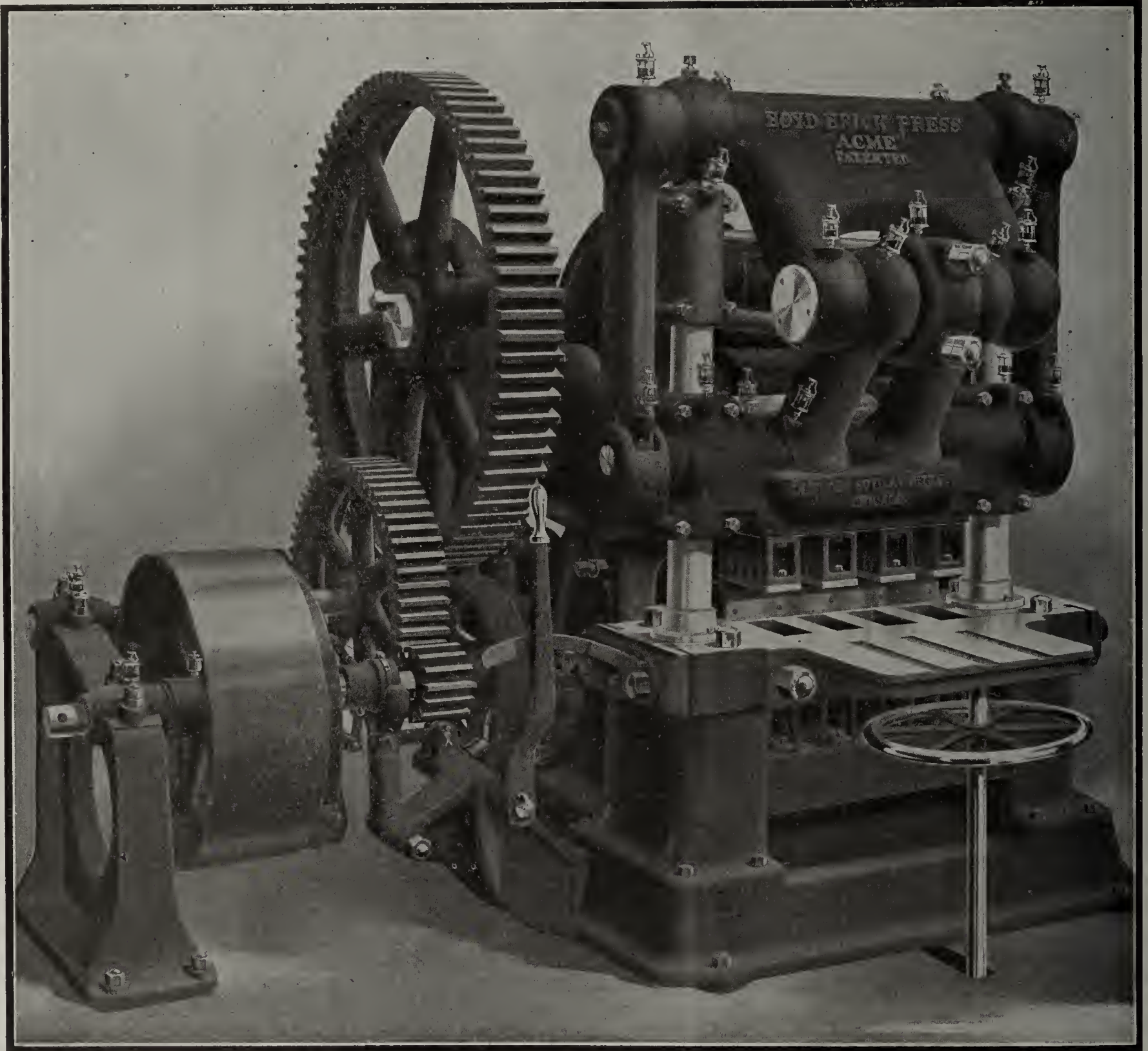
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IT'S NAME A GUARANTEE. The FOUR-MOLD PRESS above illustrated is our latest improved machine of this design. Over ONE HUNDRED now in use. Especially adapted for working shales.

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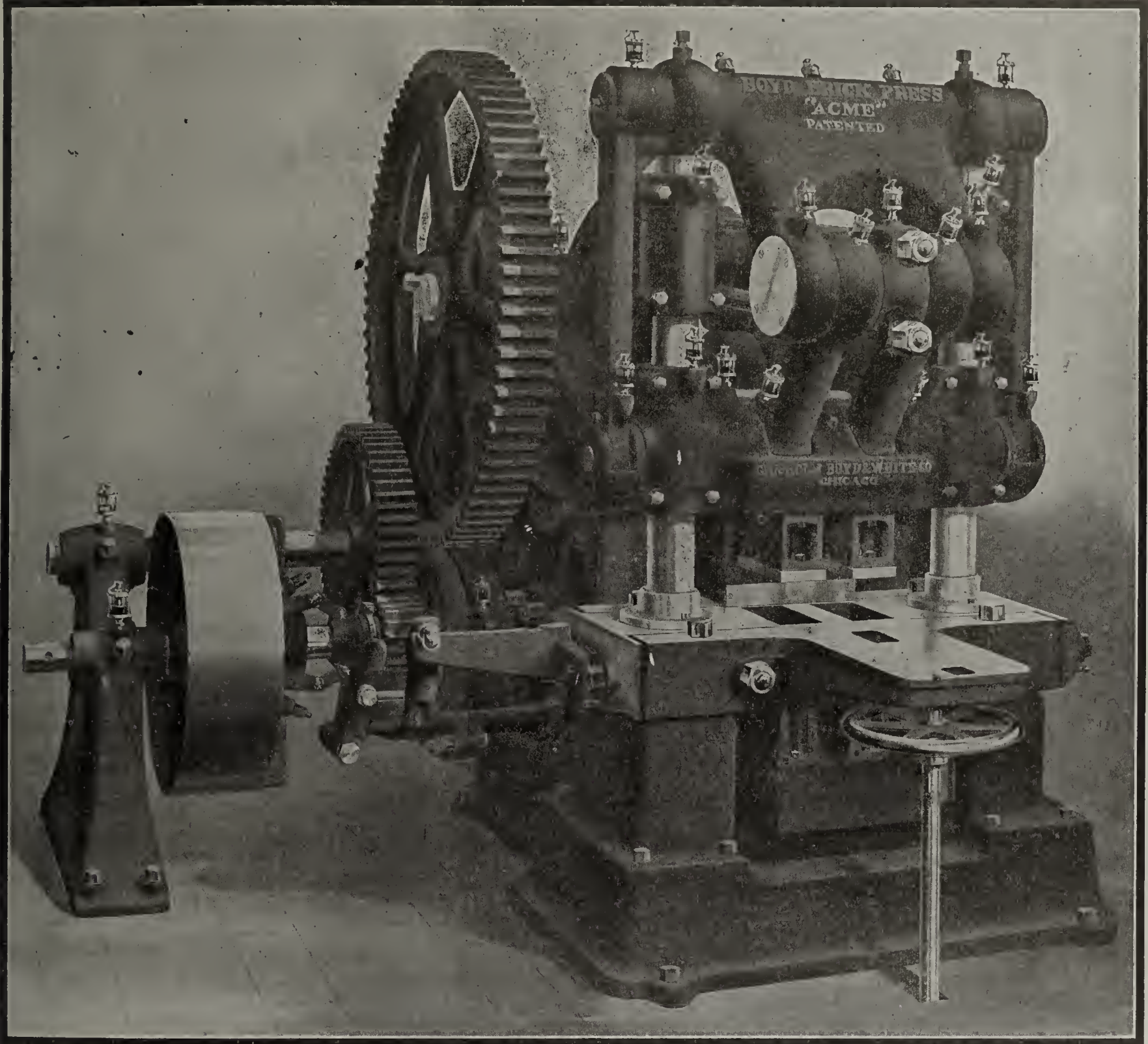
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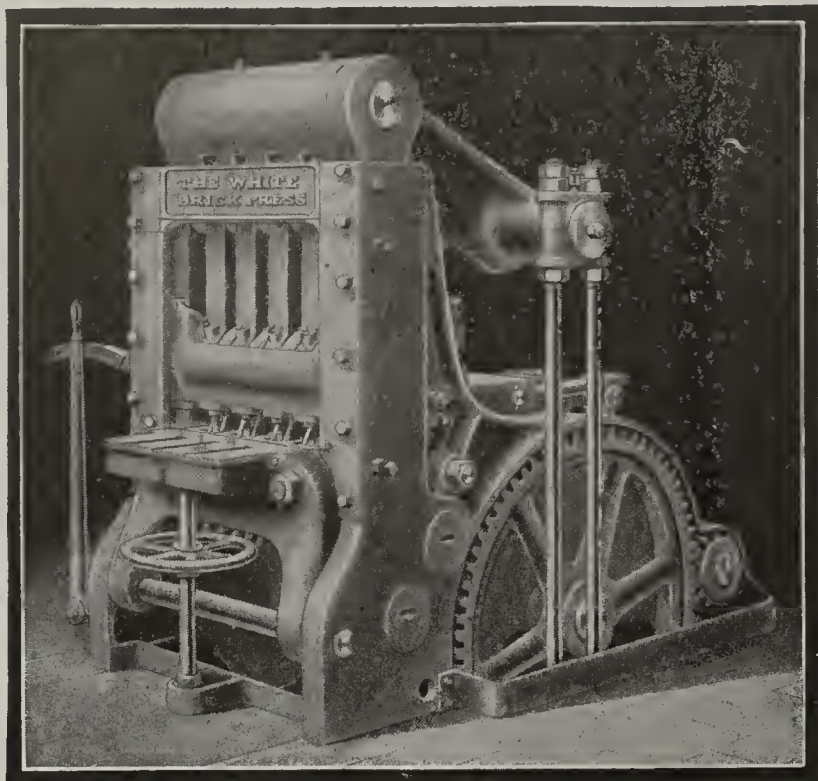
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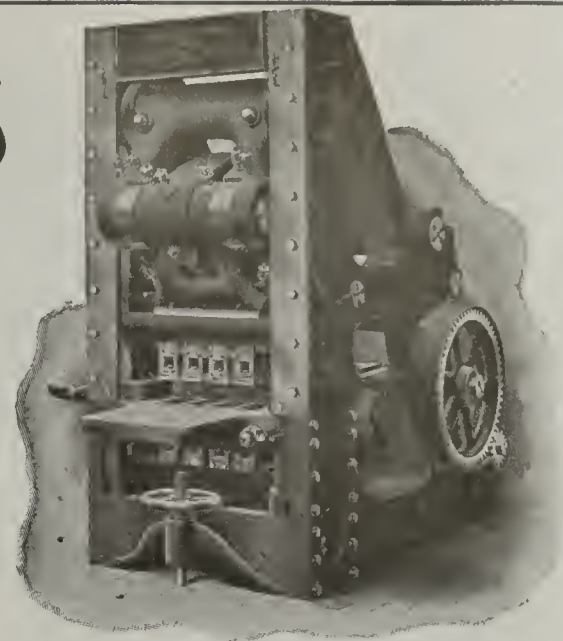
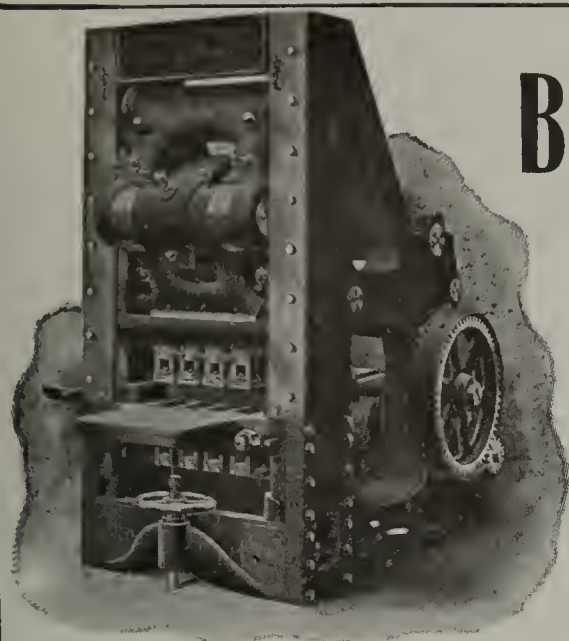
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AMERICAN SAND-LIME BRICK CO.

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The highest development of the Art of Brickmaking Machinery so pronounced by the United States Government.



The BERG for the highest grade of pressed brick of shale or clay. It makes all kinds of shapes and sizes of brick. Changes from one shape to another can be made in less than an hour's time.

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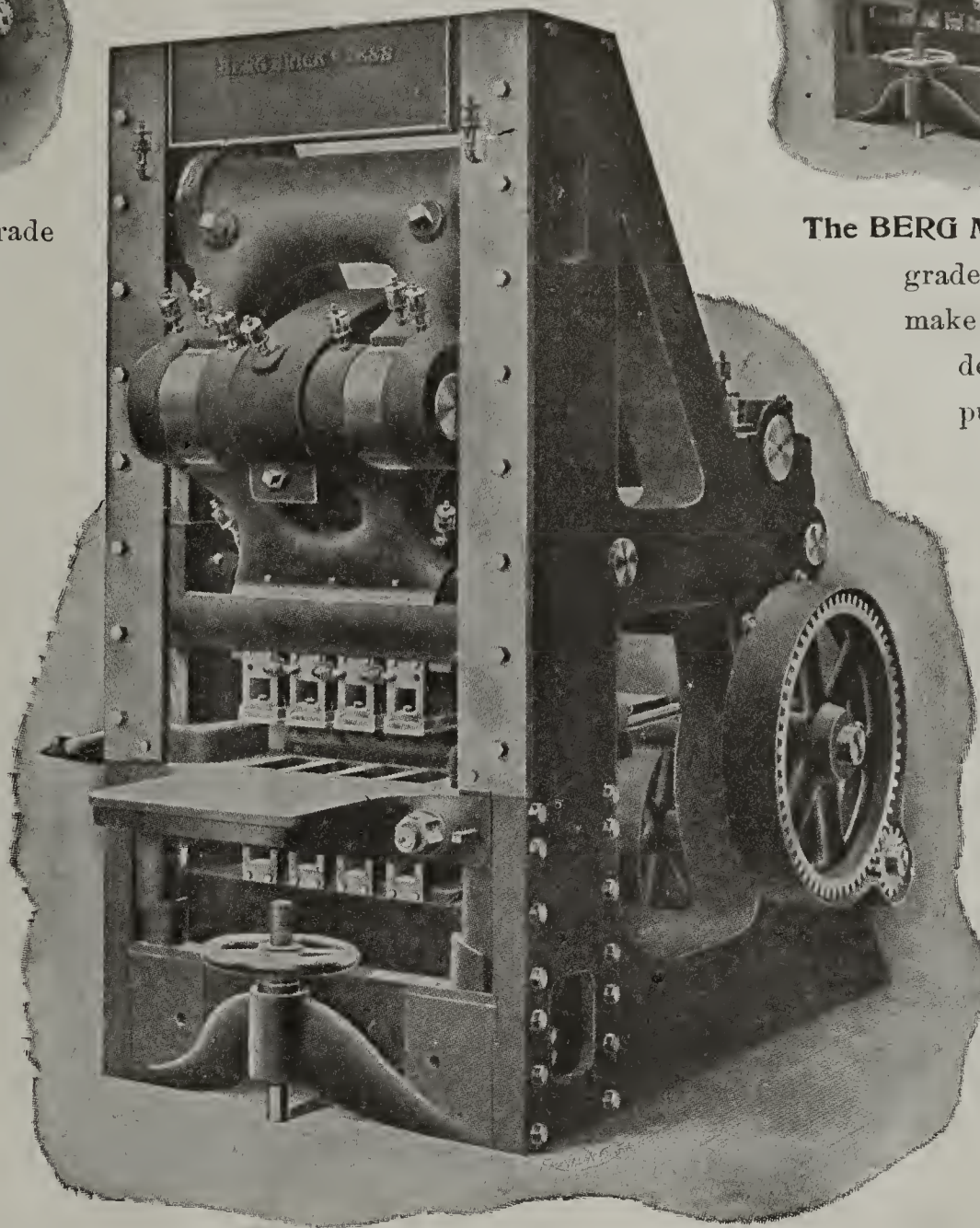
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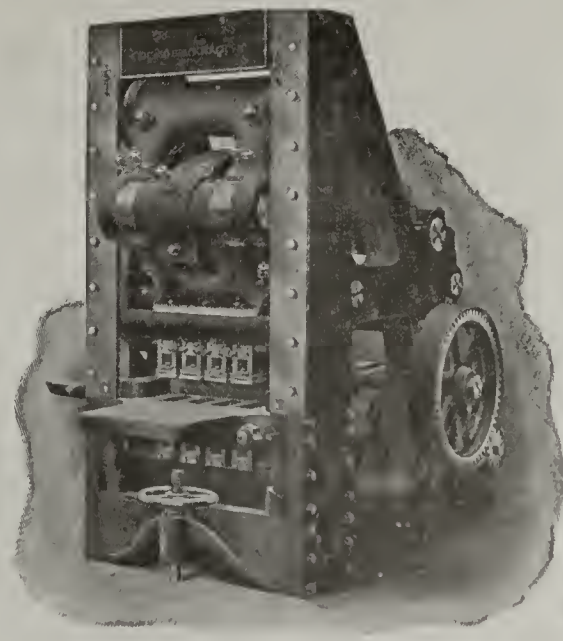
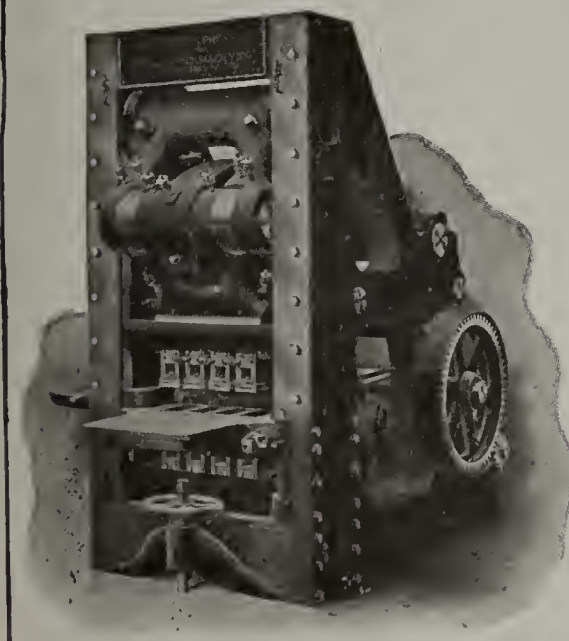


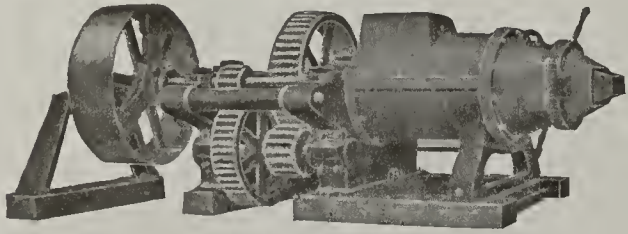
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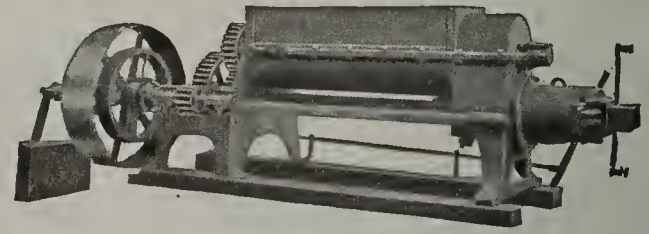
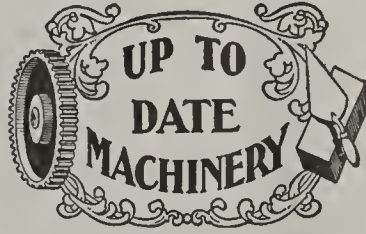
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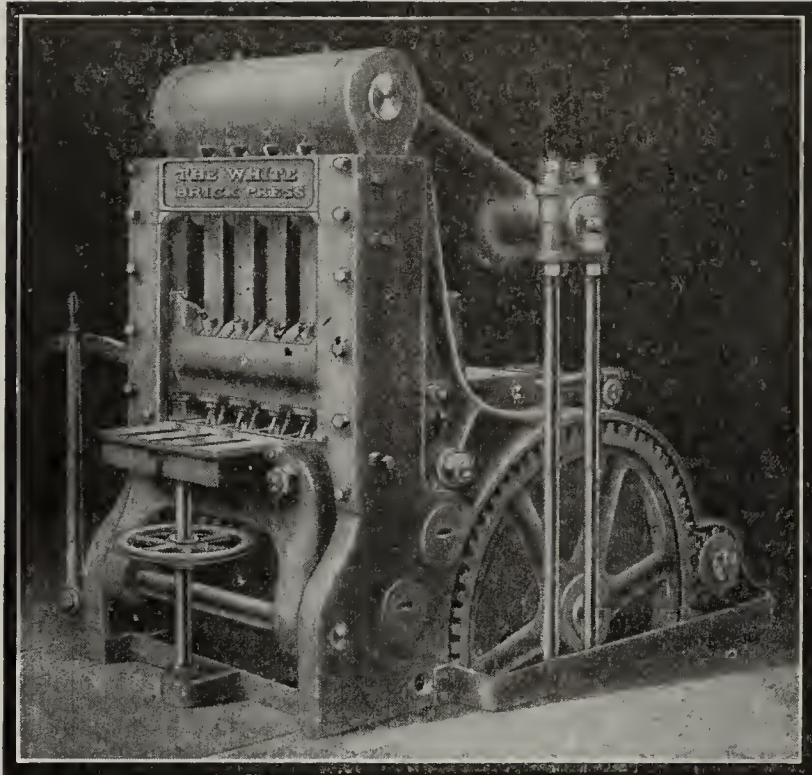
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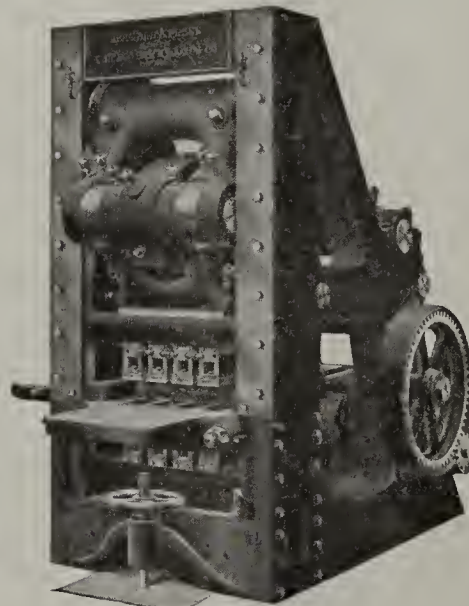
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UP=TO=DATE MACHINERY

For Making all Kinds of Brick—
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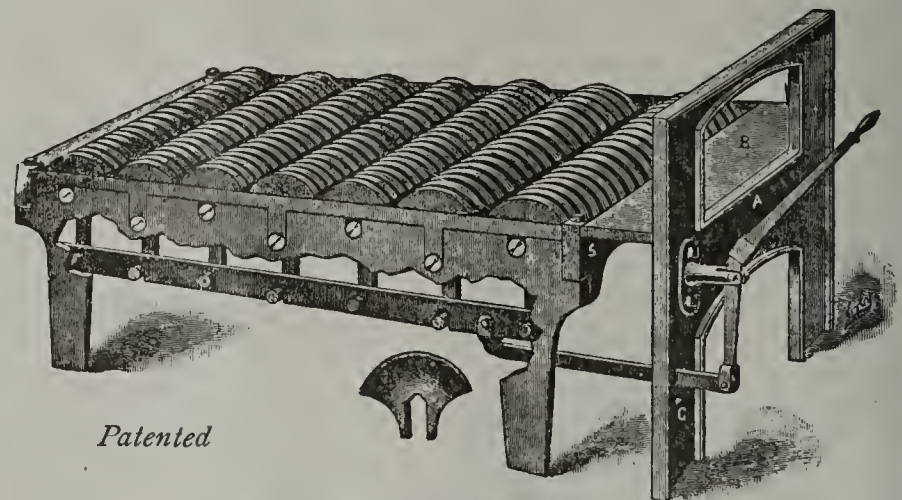
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In addition to our well known BERG PRESS, we are now bringing out our new WHITE PRESS for clay-brick work. It is especially recommended for difficult and refractory clay. By far the most powerful press built. Removable molds, changed in SEVEN minutes. Special catalogue and full particulars on application.

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Rocking and Dumping Grates for Kilns. Save coal, save labor, and do away with checked brick. Send for "Lecture on Combustion," by His Satanic Majesty.



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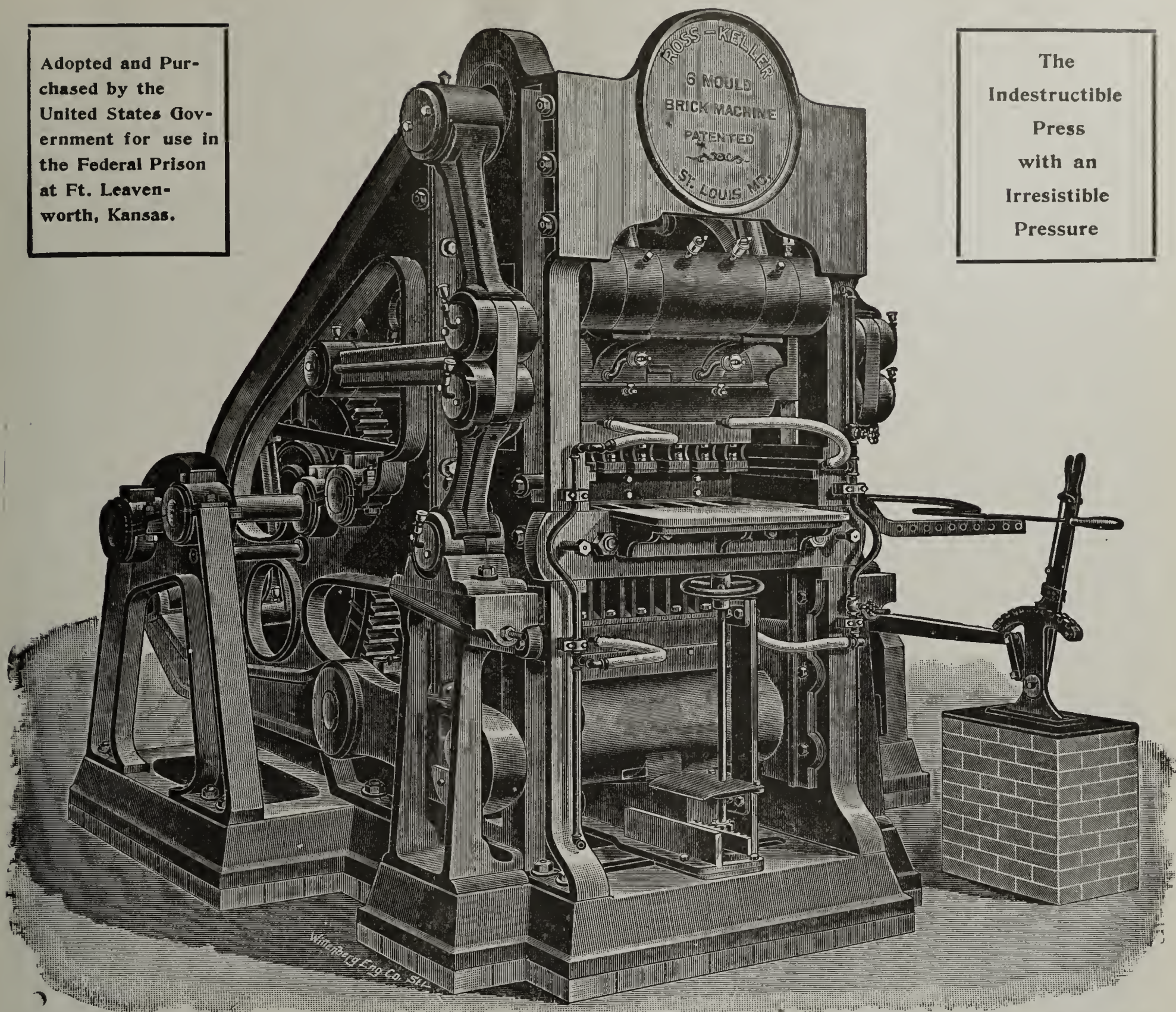
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In position ready for use. Part of frame cut away to show connection below.

Chicago Brick Machinery Co.

1308 Great Northern Bldg.

Adopted and Purchased by the United States Government for use in the Federal Prison at Ft. Leavenworth, Kansas.

The Indestructible Press with an Irresistible Pressure



WE BUILD

Sand-Lime Brick Plants, Shale and Clay Brick Plants

ARE ALSO SOLE MANUFACTURERS OF THE

Ross-Keller Triple Pressure Brick Press

The strongest and most efficient Brick Machine made, and the only Press that gives three distinct pressures to the brick

ROSS-KELLER TRIPLE PRESSURE BRICK MACHINE CO.

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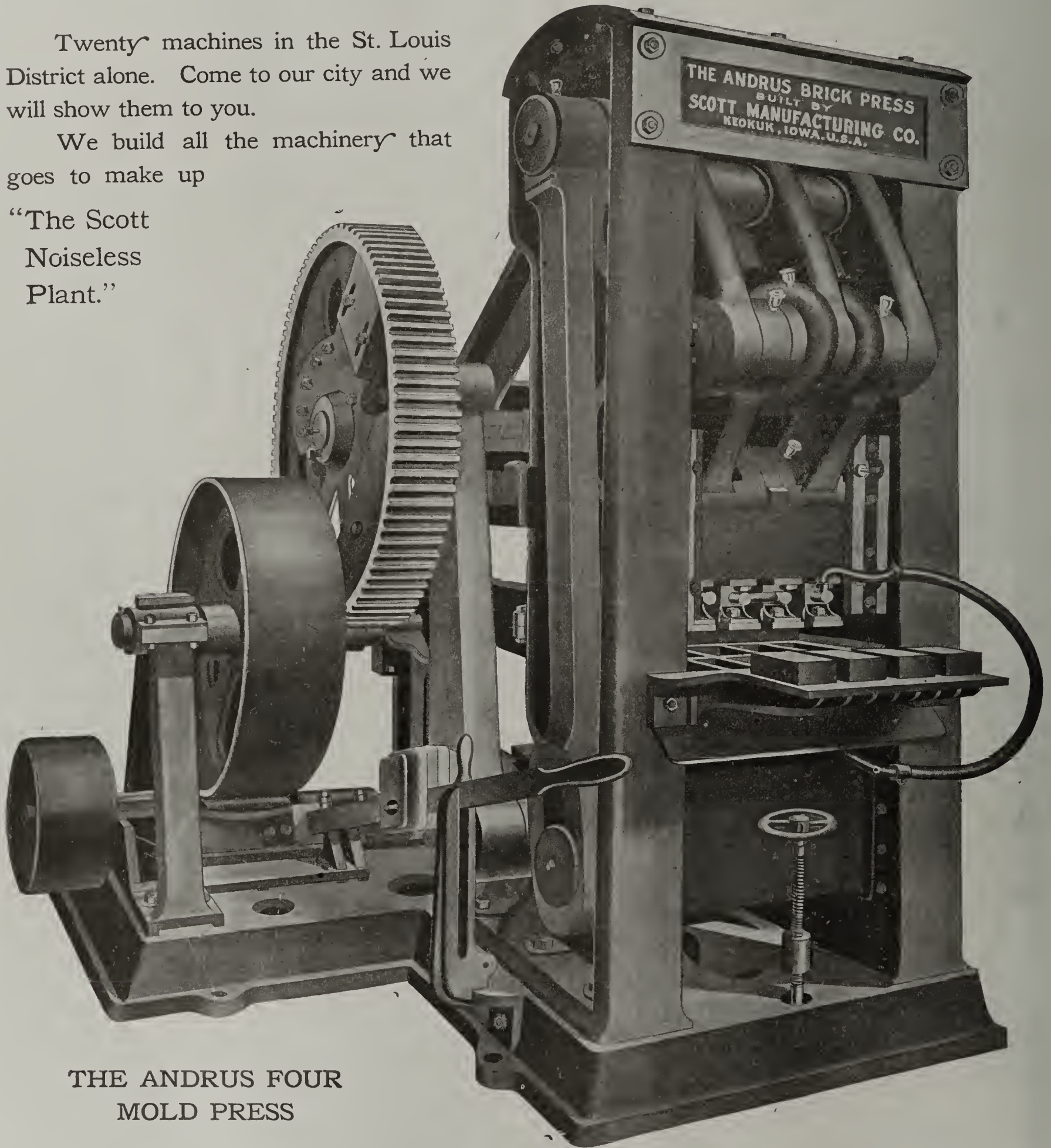
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This is the Press That Scott Builds

Twenty machines in the St. Louis District alone. Come to our city and we will show them to you.

We build all the machinery that goes to make up

"The Scott
Noiseless
Plant."



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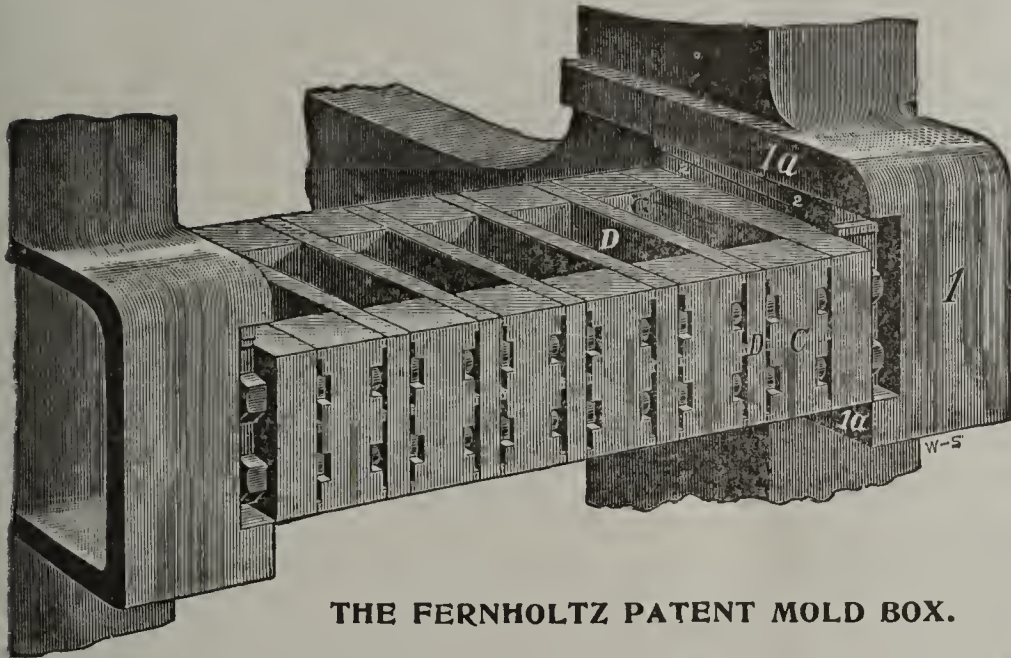
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Manufacturers of

The Celebrated Fernholtz Dry Press

Four mold Press 20,000 daily capacity. Six mold Press 30,000 daily capacity

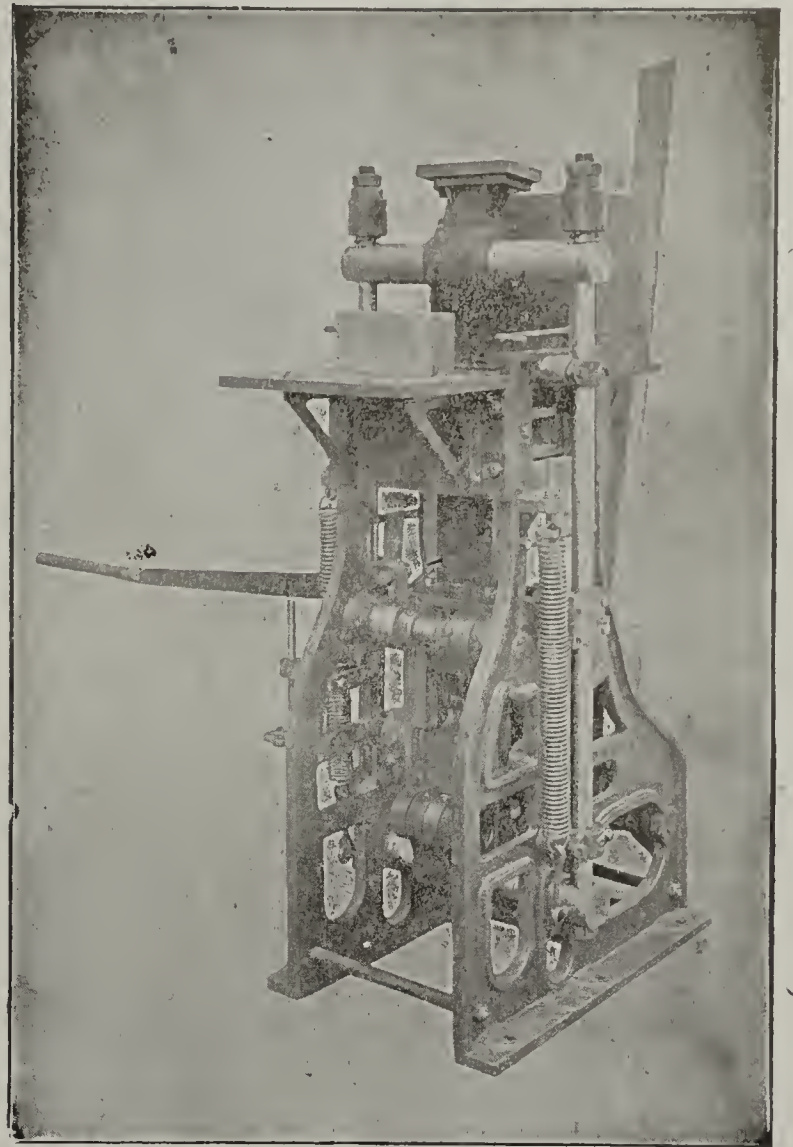


THE FERNHOLTZ PATENT MOLD BOX.

No old style Liners. The Blocks are adjustable and molds are always one size. We have put them in most all makes of Dry Press machines. Easily and quickly adjusted. They are made entirely out of chilled iron, the hardest known metal.

GRATH PATENT HAND POWER PRESS.

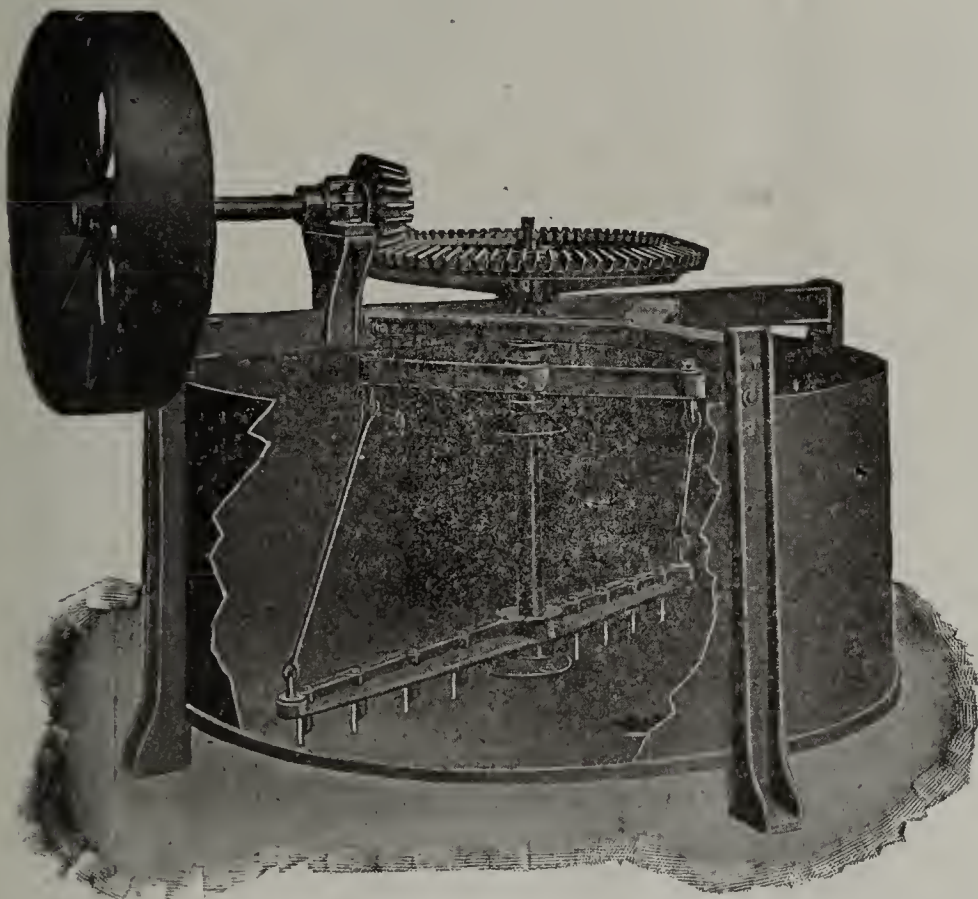
Especially adapted for ornamental designs. Any size brick up to 12 $\frac{1}{2}$ inches long, 10 inches wide and 4 $\frac{1}{4}$ inches thick. Brick set into kiln direct from press.



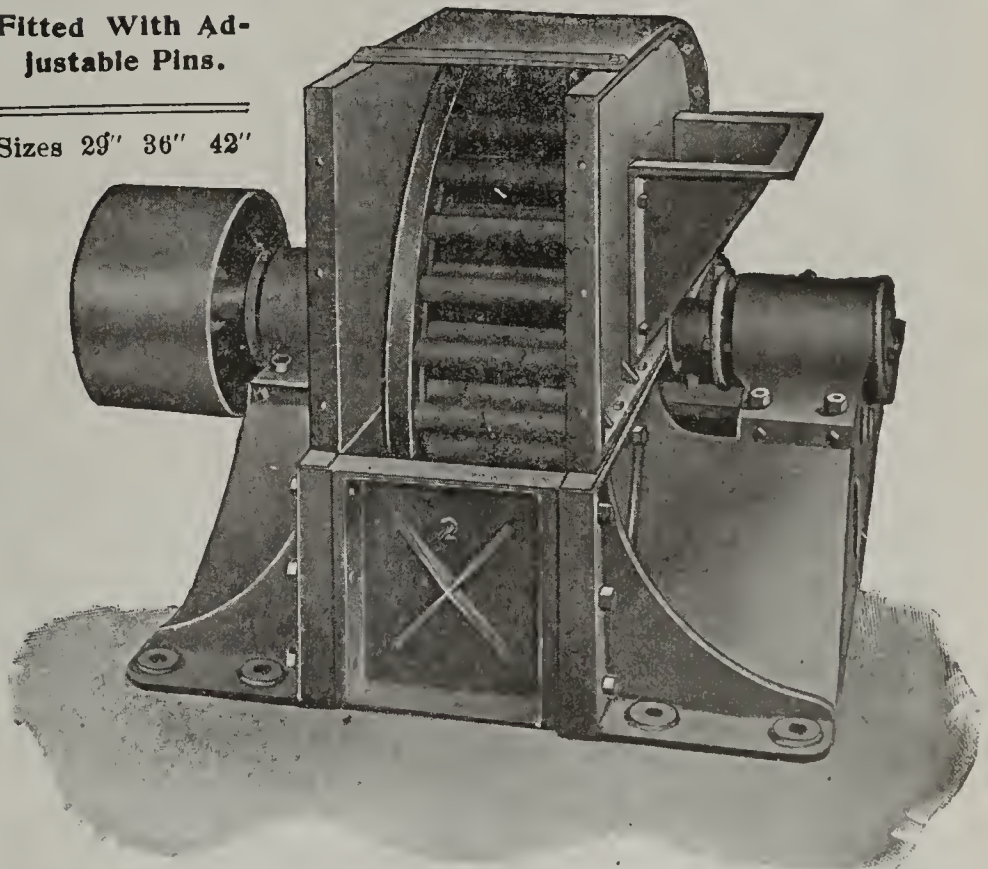
GRATH PATENT HAND POWER PRESS.

Fitted With Adjustable Pins.

Sizes 29" 36" 42"



A GOOD MIXER IS ALWAYS APPRECIATED.



THE FERNHOLTZ CLAY PULVERIZER.

The Fernholtz Brick Machinery Co.

Cable Address "Fernbrick." Western Union Code.

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DRY PRESS BRICK MACHINES

RELIANCE DRY PRESS THE MACHINE OF THE FUTURE



OLD STYLE TOGGLE MOVEMENTS SUPERCEDED BY NEW
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THE ONLY MACHINE not using the Toggle Movement.

THE ONLY MACHINE applying Pressure from the Bottom.

THE ONLY MACHINE making a Uniformly Pressed Brick.

THE ONLY MACHINE MAKING BRICK WITHOUT GRANULATED CENTERS.

Every Brick is a Face Brick. 4 Mold Press 20000 per day. 6 Mold Press 30000 per day. Adjustment permits any pressure desired (A Feature peculiar to the *Reliance*.) Cheapest because having fewest parts. (Also cheapest to keep in repair.)

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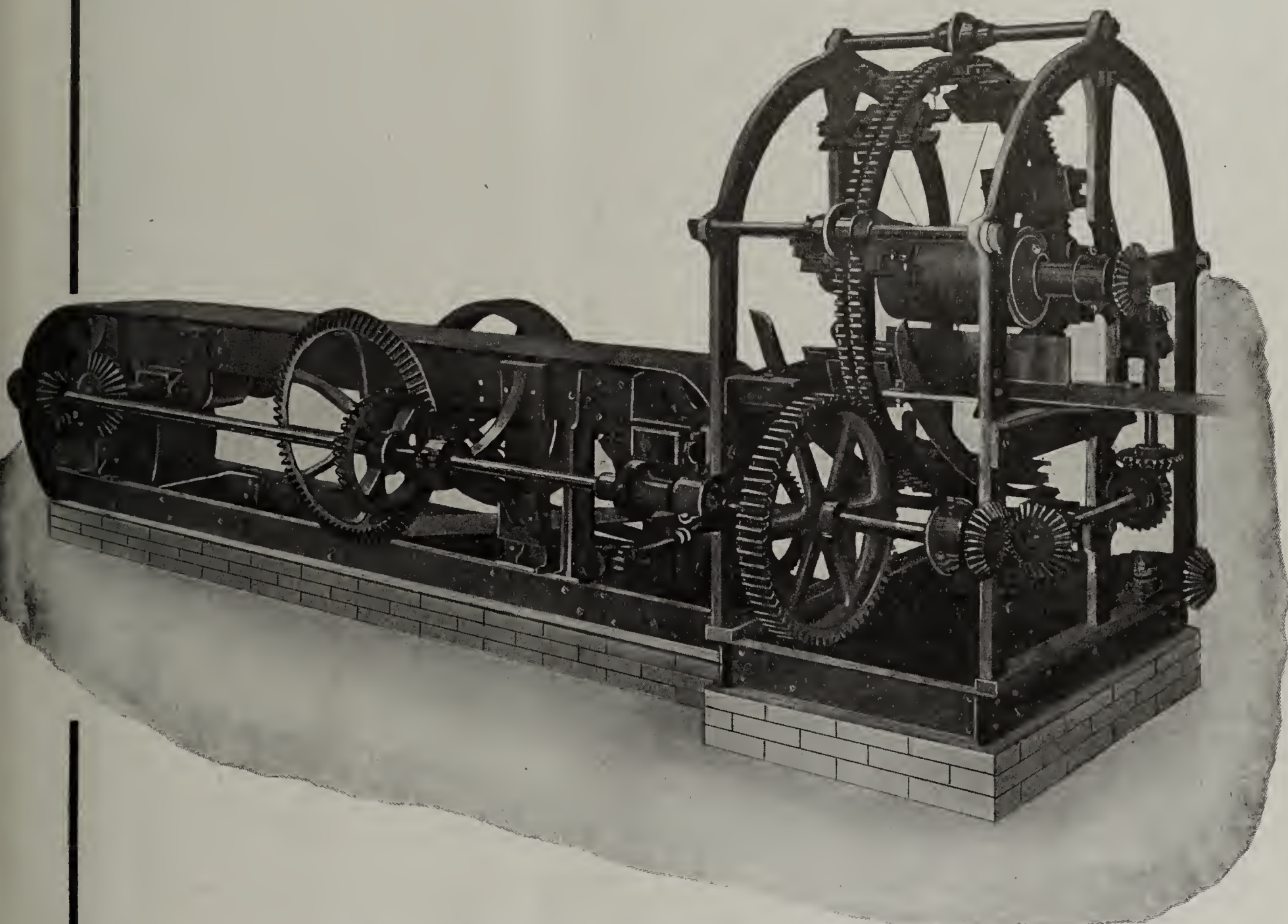
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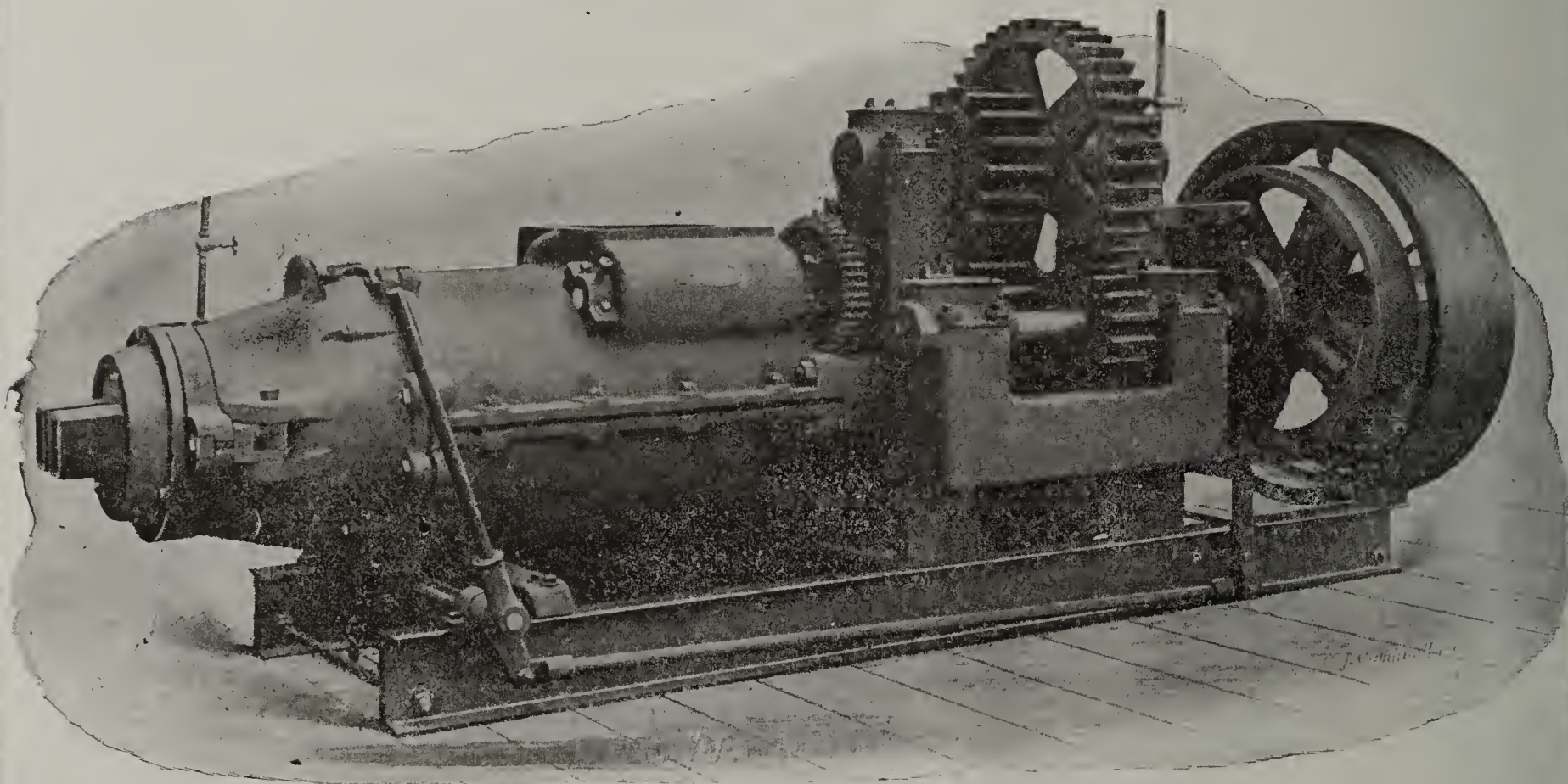


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The Brewer Patterns are new and they are right down to the very minute of modern ideas. They are built by people who know how and the weight, strength or quality or material has not been skimped to make the price low.



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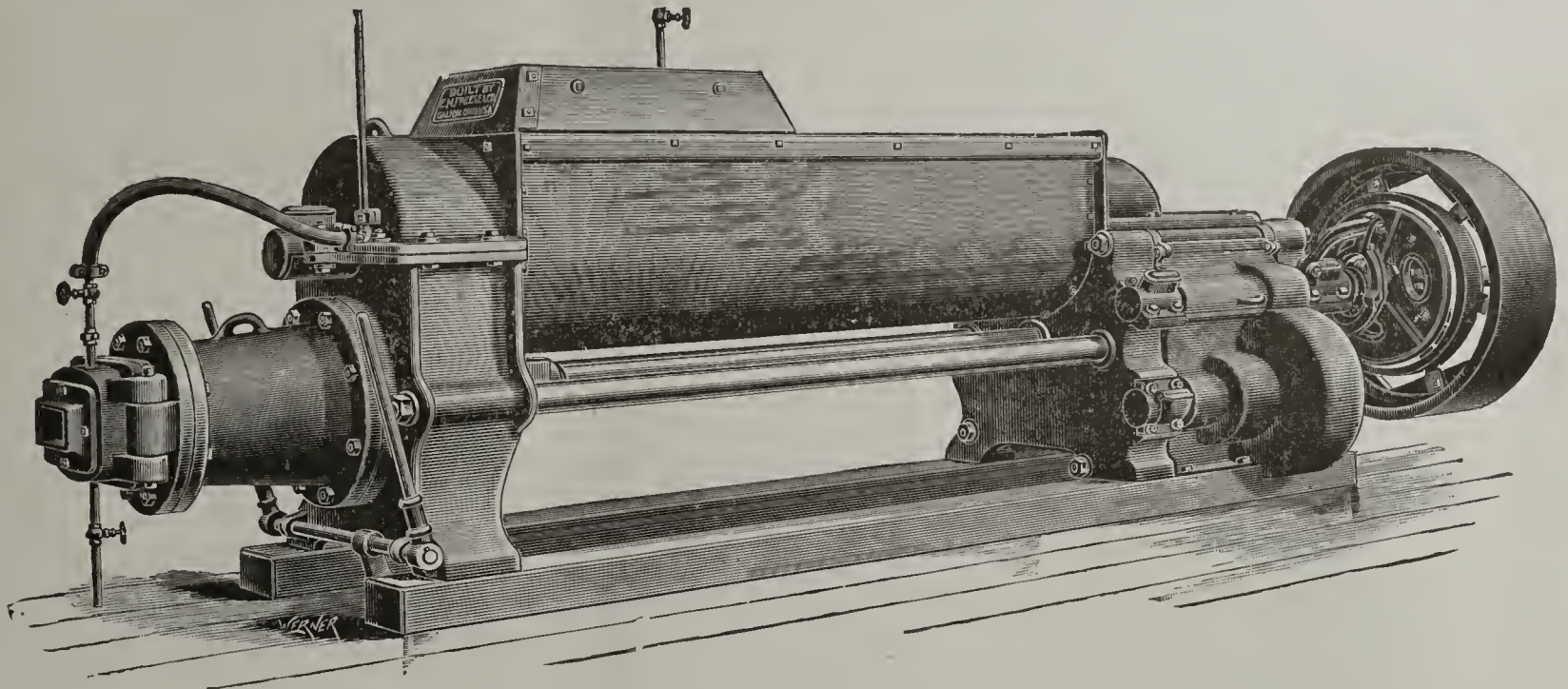
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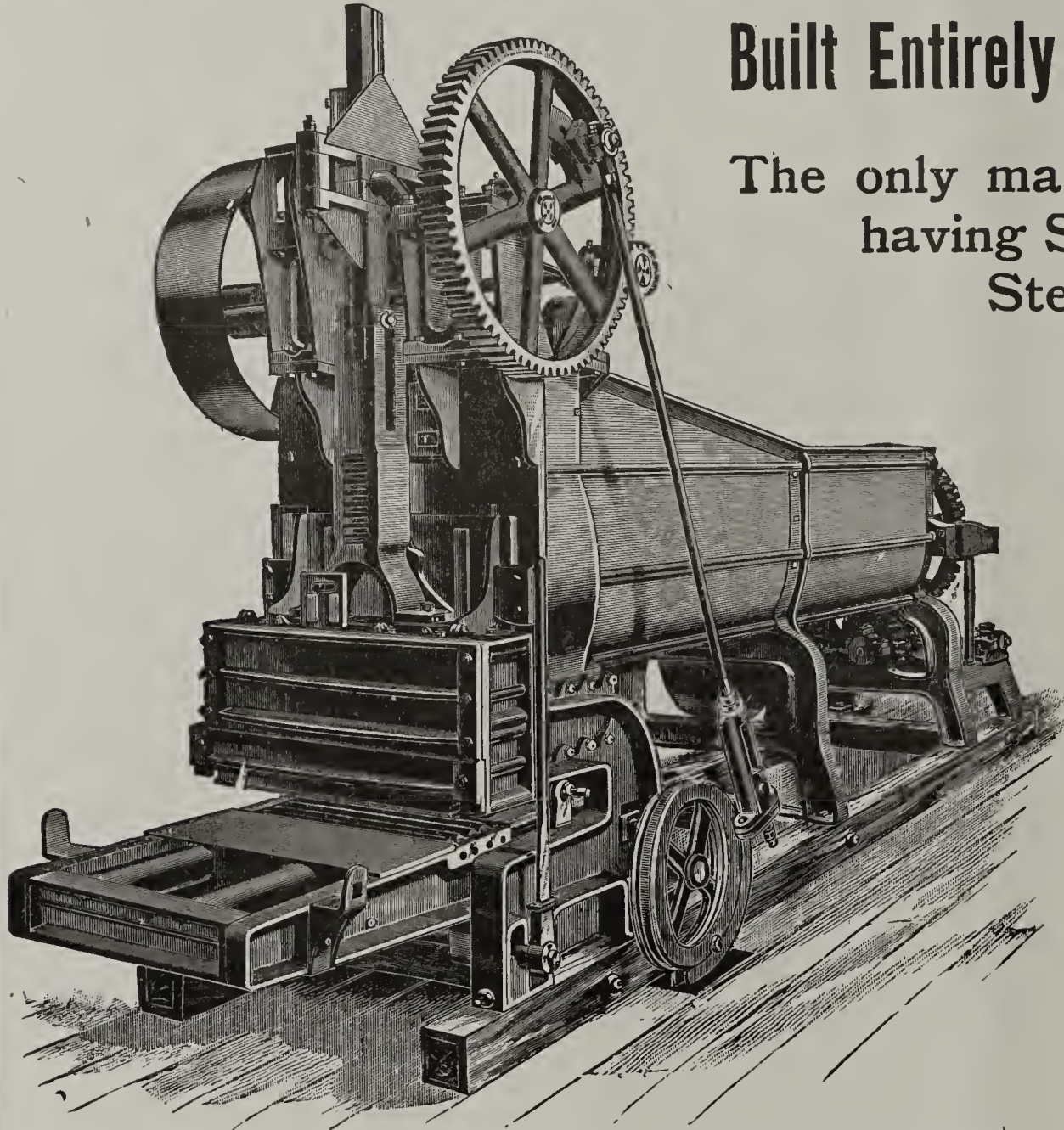
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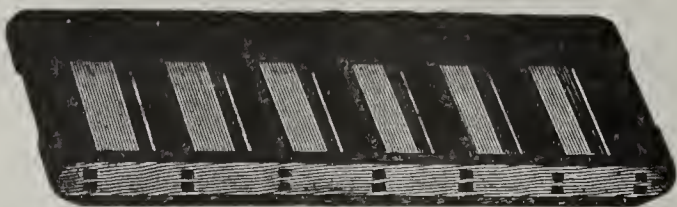


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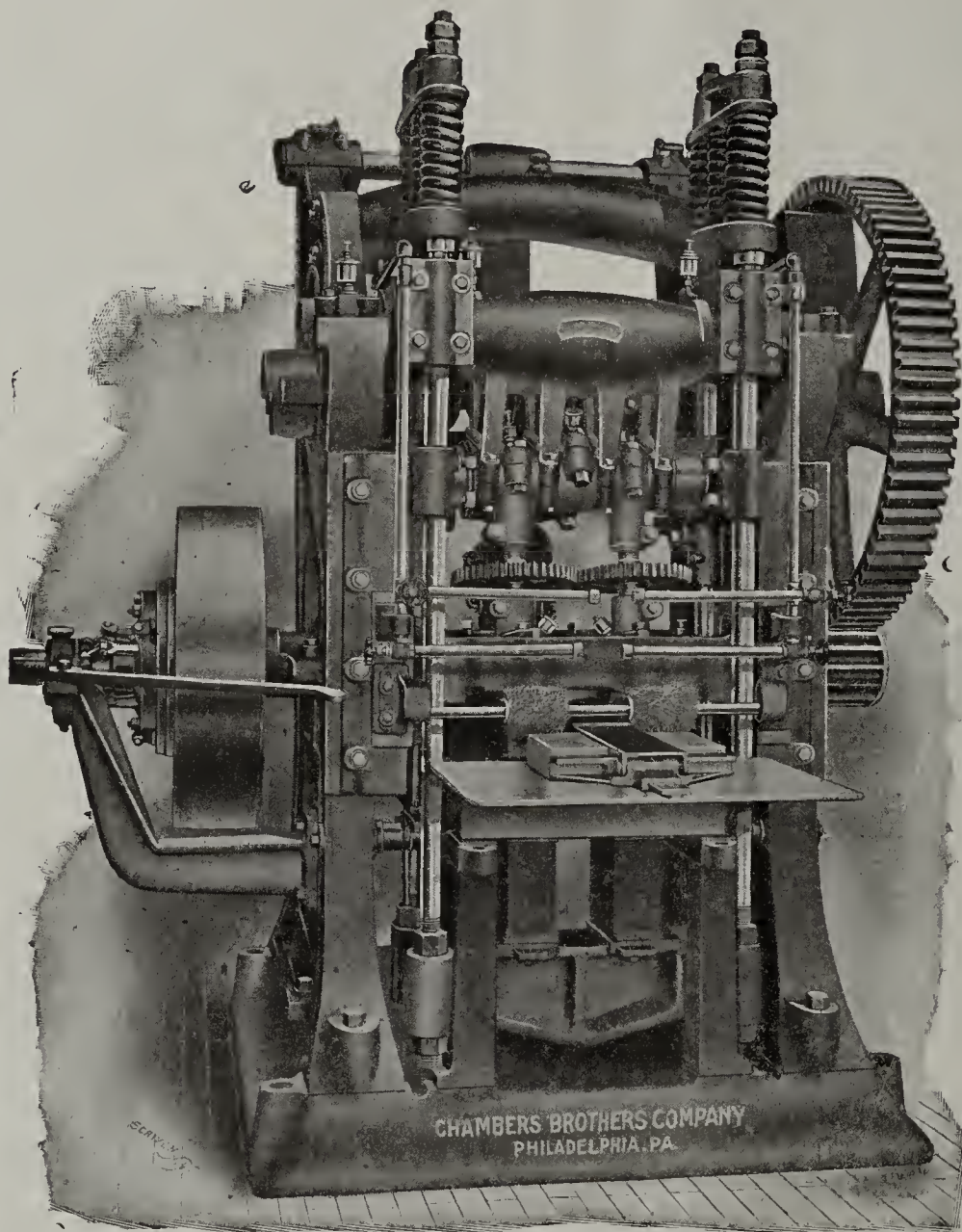
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 2,000 bricks
 per hour.



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 all above the
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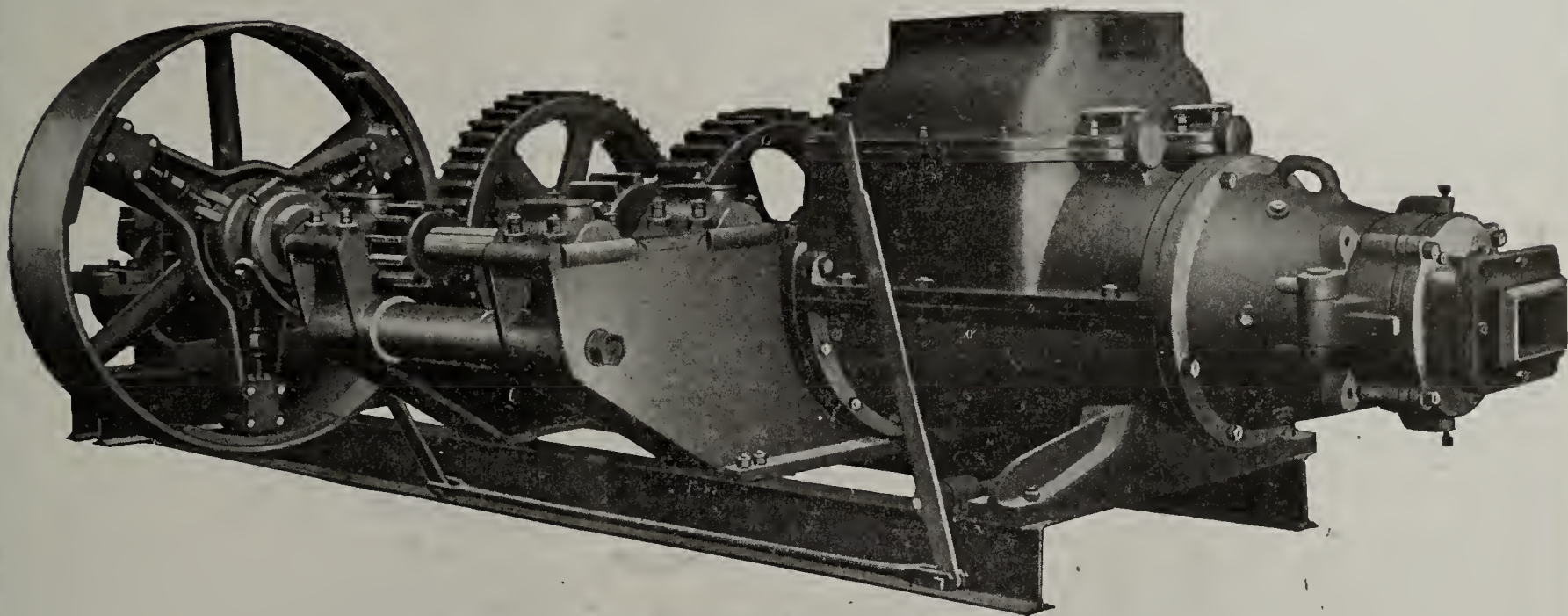
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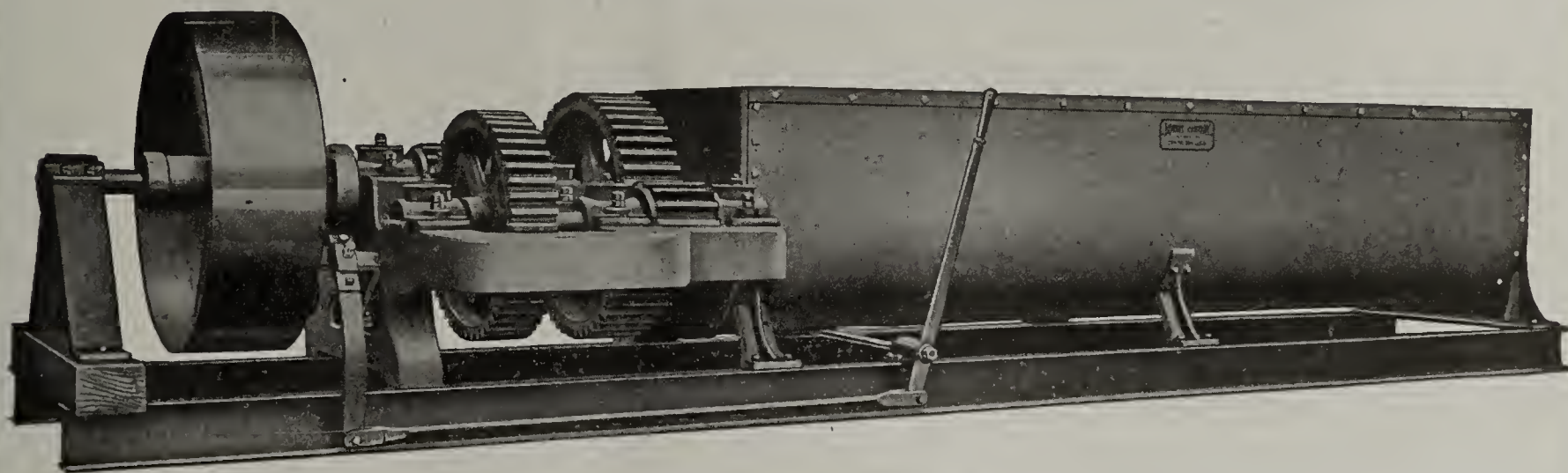
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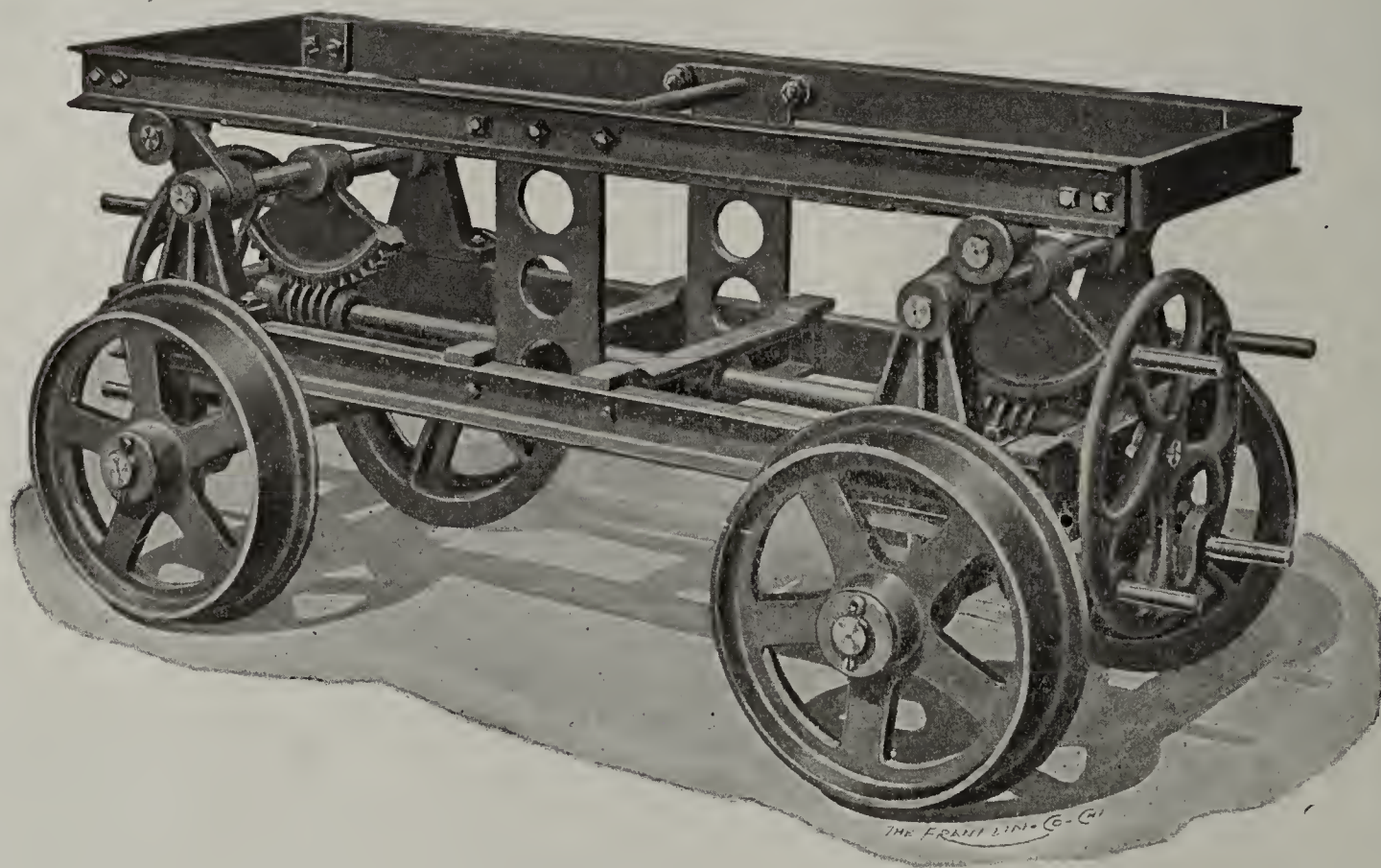
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Strong and servicable. Easy to handle. Operated from either end. All iron and steel. Raised and lowered by worm gear and segment. The most perfect car of its kind made. We will furnish the **Guilder Elevating and Lowering Car** with the necessary transfer cars and turn table at a reasonable price and send you all the plans for an open air system of drying without additional cost.

Write us in regard to this car and also let us tell you all about the "**PREMIER**" line of Clay-Working Machinery.

The J. D. Fate Company
PLYMOUTH, OHIO



Vol. XXX. No. 5.

CHICAGO, MARCH 15, 1907.

Semi-Monthly, \$1.00 per Year
Single Copies, - 10 Cent.

A REPORT OF THE TWENTY-NINTH ANNUAL MEETING OF THE ILLINOIS CLAY WORK- ERS ASSOCIATION.

FOURTH SESSION.

Shortly after 11 o'clock, January 24, in the Elks' Auditorium, at Champaign, President John W. Stipes called the fourth and last session of the twenty-ninth annual meeting of the Illinois Clay Workers' Association to order and announced that the first paper on the program was one by Mr. M. W. Blair, of Chicago, on "The Manufacture of Common Brick in Cook County."

THE MANUFACTURE OF COMMON BRICK IN COOK COUNTY.

You have no doubt all heard the story of the man who came home to the bad on bad whiskey. Not being able to find the keyhole, he was compelled to awaken his better half. She did not like being disturbed and summed up a good lecture with "How dare you come here in this condition?" In reply John told his story in one sentence. "Why, hang it, Mary, I live here." "Well, why don't you come on in the house and behave?" "O," says he, "I'll come in all right if you'll just throw down the keyhole."

On the common brick proposition there are a good many of us looking for the keyhole; and the first part of the story tells us why we should take a livelier interest in and have a better knowledge of the progress that has been made in the rate of production and consequent lowering of cost of manufacture. We live here and should take pride in the fact that by the application of sound engineering practice, good business methods, and a careful attention to small details, Cook County holds the world's record for high production and low cost, in spite of the fact that all fuel is shipped in and it is paying the highest brickyard wages known.

To point out in a general way how such production is possible, how the brick can be sold at the price they are and to persuade some one to throw down the keyhole is the purpose of the present paper.

In the first place I wish to state that it is not as, popularly supposed, all in the clay. The clays of the various yards differ in texture and formation. From Shermerville and Glenview on the north to Blue Island and Chicago Heights on the south there is a difference of nearly 50

miles. It is folly to assume that the clays are precisely alike over this range of territory. The production, however, varies only with the mechanical equipment and the management of the yards.

Practically all the yards have a steam-shovel giving a maximum of clay at a minimum expense, and putting the problems of clay supply into the hands of fewer men and those a little more intelligent than the average shoveler. The tracks are of heavy rail, well laid and kept in order. The cars are substantial, generally of 2-yard capacity, and most important of all to secure an ample supply of clay the number is always in excess of actual requirements. In other words on the successful yards will be found from 20 minutes to half-an-hour's supply on the cars at the end of the tail rope. No one method of hauling from shovel to incline is used exclusively, horses, electricity and dinky engines all being in use, the preference being to the latter. A time-saving is effected by hauling two cars at a time, practically adding one-third to the capacity of a single track incline.

The machine equipment usually consists of a granulator, rolls, pugmill and brick machine. The construction of the granulator hopper illustrates the careful attention paid to small details. When properly constructed, it is inclined only on the side from which the knives turn. The other side is straight. The knives lift the clay on the up side and cut it off against the straight back on the other side. This arrangement prevents the clay from bridging, makes punching unnecessary and maintains a regular feed. Corrugated conical rolls are used for separating the rock in preference to a high-speed disintegrator. They are satisfactory and can be run for months with little repair. The same can scarcely be said of the disintegrator. A car on a train track is provided to dispose of the rock from the rolls. The man tending them loads the rock direct. This prevents an unsightly accumulation and saves the cost of occasional hauling away with cart or team.

It must not be supposed that a high-capacity plant is run with the same steam that is used to make 40 or 50 brick a minute. The boilers are of ample capacity and the coal is unloaded direct to the boilers. Often you will find the man who unloads the cars is also firing the boiler.

The engines are economical; the feed-water is heated with exhaust steam.

Passing to the brick machine we find a competent man in charge, a man who is paid a decent wage and who takes pride in getting all out of the machine there is in it. He

keeps the machine in constant repair and does not allow the output to lag on account of a slipping belt or a set of knives worn short. If the morning's run is not up to standard, the knives are set ahead at noon, an advantage which the adjustable knife machine has over the other type. The result of this careful attention is the enormous output. Repairs are kept in stock patterns of various machines; parts are owned and instead of paying the machine man 10 cents per lb. for cast iron it is bought right at home for 2½ cents.

Expense in construction is weighed against a saving in labor or an increased output. That which shows a profit is done without hesitation. While comparisons are odious, there is a company in Indiana which hauls its coal at a cost of 25 to 30 cents a ton. The installation of a tram road would show a profit of nearly 100 per cent on an investment of \$3,000. They talk about it but do not act. In Cook County it would be like the darkey who explained that if you walked from Brazil to Center Point it was 40 miles; if you went in a wagon it was 20 miles but if you gets on the cars and goes you's dar now.

If a location demands a special machine to render it efficient the machine is built. The location is not ruined and the output of a plant crippled, simply because John Jones has only one set of patterns for the brick machine he wants to sell. In fact, John Jones does not seem inclined to build the kind of a machine, pugmill or granulator which is powerful and efficient. He prefers to sell repair parts instead of putting the weight of 10 years' experience into the machine in the first place.

I stood beside a machine in Chicago recently with the president of the national association, who was one of the skeptical ones last winter when I told that body about making 500 brick per minute. Together we timed the cutter and found it was running at a 518-a-minute clip. I have seen a published statement that the production upon that yard was 52,551,400 in 2,083 working hours, an average of 25,228 per hour during 1906.

I have been told that in 1892 the makers of that same cutter wrote one of their erecting engineers that any man who talked of guaranteeing a machine to cut 60,000 brick in 10 hours was a fool. 1892 is within the memory of all of us and today the output of that same plant is 175,000 to 200,000 in 8 hours. The clay has not changed but the machine has been speeded up, equipped with cut-steel gearing and the little faults practically eliminated.

I wish to insist upon cut-steel gearing not only for the brick machine but throughout the plant and while my position upon this point has been subject to dispute by one of our prominent members, and cut steel condemned as a needless expense, another year's observation has simply strengthened my opinion. One plant in Cook County has been in operation nearly two years making 350 to 400 brick per day and in that time they have not replaced a single gear. I leave it to your own judgment and ask if you would not be willing to spend \$150 or \$200 not to break a single gear for two years.

The gentleman to whom I refer and his associates less than ten years ago operated a yard in Cook County with six machines. Today on the same yard they are making more than one-half as many brick with one machine. The gearing did it and I believe the majority of us would prefer to see the present yards throughout the state make three times as many brick than to see three times as many plants in operation.

The off-bearing belts are of sufficient length to accommodate from 12 to 15 cars giving ample time to take away loaded cars and both time and space to catch the brick before they go over the end. The transfer tracks at the machine end are put in level of heavy rail and wide gauge,

avoiding the use of stops and latches which are time-killers at best and reducing likelihood of wrecks in the drier to a minimum.

The drier cars are strong, many being in use having 2-in. axles and capable of carrying 1,000 brick. The drier tracks are securely set generally in concrete. The doors are semi-automatic which will open ahead of a runaway car. All these features reduce the annoyance and expense of wrecks in the dryers. The cost of drying runs about 10 cents per M., the products of combustion from the boilers supplemented with an auxiliary furnace being the source of heat. The expense of operating an exhaust fan is obviated by use of large-capacity stacks.

The burning is done in scove kilns and both the amount of fuel and the time required are remarkably small. An arch of brick containing 36,000 brick is generally burned in 90 hours with 4 tons of coal and 1 cord of wood. The cost of oil burning has proved a little more than wood and coal owing to a necessity of using steam with the former.

While the kilns are not permanent the sheds are constructed in a substantial manner, are high enough to be fairly safe from fire, wide enough to give stability and long enough to store several millions for the spring trade. The loading tracks are generally several in number and it is possible to set in loading position as many cars as the railroad will give. While the loading itself is piecework the possibility of getting out a large order in quick time is a trade advantage not to be overlooked.

You say the hurry-up method produces rough brick, that they have black cores, that the ends are not square. You ridicule the man who uses them in your own town. Admit every criticism you offer and the fact remains that they are going into the finest buildings the world has ever seen and, what is of still more importance to you, they are under-selling you in your own market.

The question is, what are you going to do about it?

The only logical resource is to apply the same or better methods to your own business.

Standing back crying "rebate" is no cure and I can convince any one of you in one day's time spent in the Cook County yards that they do not need a rebate to deliver brick to any point in Illinois, at from \$5.00 to \$6.00 per M.

Cheap brick is the ultimate solution of the building material problem. The brickmakers throughout the country must get into the fight and raise the efficiency of his plant to such a point as to defy competition. They must educate their trade to take a brick which can be made twice as fast and sold for 25 per cent less money.

It is surprising how good-looking a brick becomes when one knows that his machine is making them at the rate of 500 per minute. It does not take much of a stretch of the imagination to believe they will last as long in the wall as those made at a 30,000-a-day rate.

Give sufficient discount to the contractor to make it worth while to walk into your office and lay down the cash and the time now spent in chasing slow accounts for money to meet the pay-roll can be spent in raising the efficiency of the plant. Take advantage of the information which is being put on record by our universities and technical schools. Employ their graduates and seek the assistance of the best engineering ability obtainable; men who have spent their time in solving the problems involved and who are practical and trained in correcting faults, men whose integrity is such that for a reasonable fee you can entrust the spending of your money with the knowledge that they will spend it well and spend it but once.

When it is your plant that is selling brick at less than your neighbor's cost price, and still making a nice profit you will forget the time when you thought that Cook County was selling below cost in order to put you out of business.

President Stipes: Mr. Hammerschmidt, what is your opinion about making brick so rapidly?

Mr. Hammerschmidt: I agree with Mr. Blair that if I was able to make them as cheaply as they make them in Chicago, I wouldn't say much about the roughness of the brick. I would be satisfied to take in the money. There is no doubt that the brick are all right. But if I were to put up a building, I might like to put in Chicago brick, but I couldn't do it, because I am still making common brick. It wouldn't look very well, unless I did it at night.

Mr. Pratt: I think, if Mr. Blair was to come and examine me in my little way, I could give him some information about the reasons for the rapidity. I don't amount to much as far as the railroad is concerned, I have found that out several times; but when he talked about rebates from railroads I have stood through considerable of it and still live. It might be on account of the little piece of land I have out there that has held me up. But the rebates I have felt very severely in my own case. It is hardly worth while for me to say anything about it, because perhaps I cannot remedy it. But I do not think there is any question but what the men in Chicago have the preference over any plant in the country. Last summer I had to do some figuring over a little job in my town and they expressed a preference for my brick. I investigated and found that the railroad would deliver Chicago brick at my station for \$5.30 per thousand. I took the matter up with Chicago and said, "do you guarantee your brick." They said, "we guarantee 80 per cent." I said, "What about the rest of it?" They said, "that is enough; if you get 80 per cent that ought to be enough." In regard to the railroads, I will say this, that I am buying my coal from Monroe, Illinois, and I have been for eight years. The coal company tells me that they maintain a rate over the Illinois Central and I find that they haul the coal four miles to Chicago for the charge that they haul it for me for one mile. If you will take the railroad element out of it I will seek the solution of the proposition to make brick with Chicago. Chicago brick under average conditions may be all right if they are protected, but if you put them at the foundation of the building, in a great many cases they will not stand. That is my experience. There is a man in our town who built a house two years ago. The Chicago brick proposition got so that I didn't like to bother with it, so I said the brick business isn't what I am looking for; but this man insisted on my filling the order and I let him have all the brick I had, but I did not have enough to fill his order. I had some brick shipped in and ever since I have been getting abused because I let him have the brick which did not prove good. For these reasons I have to take a little exception to the gentleman telling us to adopt such methods. No man can go to the expense in the country and put the money in that they do in Chicago when the railroads are acting as they are. Wherever I go and find a place where they are using Chicago brick in the city, allowing me to be the judge of the samples of Chicago as they run and as they come to our town, the Chicago man has the preference on the Chicago brick. When

it comes to shipping, we get the small end of it. That is the way I feel in regard to the situation.

President Stipes: Of course I am very glad to have you talk that way. If there is anybody else who can make a speech that way it will please me first rate.

Mr. M. W. Blair: I am not going to argue my point, but I think it is up to the Illinois brickmakers to get all that they can. That is the whole point of my speech, and a little talk along that line will probably bring out points which will be of mutual benefit to all the brickmakers of Illinois.

Mr. Pratt: I appreciate the cost of making brick at my own plant, but it all comes right back to the first starting point. If we could eliminate the railroads and their rebates, we would be better off. I went to one road and said, "Can you do anything for me?" They said, "Yes, you go down there and put up your plant and we will see what we can do," or, "We will let you see what we can do for you." I figured that out like this: When they did that, they thought that I might go and without any distinct promise or making any satisfactory or definite rates, or side tracks, that I might go and put in a plant and invest perhaps twenty to twenty-five thousand dollars to complete with the Chicago brickmakers; then they would say, "if you have got the nerve to go ahead and put that plant in without compensation from us, you can operate on the present conditions; as a business man you have figured out that you can operate under the present conditions, so go ahead."

President Stipes: What is your opinion, Mr. Frazier?

Mr. Frazier: I don't believe that I care from my standpoint to discuss that paper. I would rather that we do not have those arguments. You can readily see why.

Mr. Hemmert: I don't care to discuss the contents of the paper, but there is one principle that I always adhere to and that is quality and not quantity. I come in competition with the Chicago brick and they are all right to a certain extent; they appear to be all right but they are really not as hard a brick as they appear to be. I understand that they burn brick in 90 hours. It takes us 14 days to burn our brick, consequently it costs us more to burn them. If we were to turn out the quantity that they do in Chicago, we could sell our brick a little cheaper. But really they don't burn their brick in that city; they simply bake them. They have a lot of matter in their clay so that they can bake them, not burn them, in 24 hours. I could get into the Chicago market, but they charge me \$6.00 a thousand to get into that market. If you want to make money out of the business, don't try to get the whole trade because if you sell them for \$5.00, somebody else will come along and offer something for \$4.50. Where is that going to end? You are wearing out your machinery and you are eating up your clay. If you have clay in the locality where your plant is, the man who owns that clay thinks his land is worth a thousand dollars an acre and perhaps it is. I take it that we should try to improve our product. Burn them hard, to take the place of stone.

Then there ought to be more apprentices in the brick-laying trade. The masons get too high wages for their work in comparison with other trades. The great trouble is the mason thinks that he is the boss, the journeyman mason, and not the contractor, and that is the worst feature of it. They hem the contractor down to a certain number of apprentices and the result is that there are not enough men to carry out our work. The result is that we are losing out by not having enough people to help us to consume what we can produce.

President Stipes: To Prof. Ross C. Purdy, director in Ceramics at the University of Illinois, had been assigned the topic, "How Fast can Brick be Burned?" We will hear from him.

HOW FAST CAN BRICK BE BURNED?

We are trying at the University to prepare four papers for the St. Louis meeting; we have prepared in our department three for this series of meetings, also we are attempting to finish within a month from now a Survey Report, and as a consequence we have been working sixteen hours a day, with about 8 hours for sleep and meals. I must ask you to take the same medicine, therefore, that the students are required to take two or three times a day, that is, a lecture from notes. I wish to make this as informal as possible. If Brother Blair has any objections, or the rest of you, to the statements that I make, I wish you to feel free to question my statements, as my students question my statements, so that in the end we may come to a definite understanding and perhaps have some definite points that we may work out together in our future studies. If we do not know your views, we conclude that we have settled the question, and that there is nothing further to study. We will grant that there is a possibility of difference, of course, and as long as there is a difference of opinion there must be some work done and we will attempt to carry out the research required to bring light on the points. Therefore I ask you, as I ask my students, to freely question the statements, to bring out side lights on the question, in order that there may be a better understanding of the points developed.

This question was suggested by a reply from one of our prominent members to the letter Prof. Rolfe sent out asking for the subjects that the members most desired to have treated at the Institute. This gentleman went into the details in regard to the rate at which brick could be burned. He is now spending 12 days on a kiln and he cannot see why he could not reduce his time of burning to three or four days or even, as the Chicago brickmakers do now, to two or three days. We have our opinions on this proposition. While we have not studied this question experimentally, we have a quantity of evidence that might apply. In as much as we have made no experiments on the proposition under consideration the statements made will be merely opinions but opinions gained from experience extending over a period of five or six years on a large number of clays from a large number of sections of this country, including the clays of Texas to Maine, and a great many from west of the Mississippi. Fortunately I have been with Professor Orton and have been associated in a way with Mr. Richardson, testing clays from all over the country.

The first influence on the rate of burning is moisture. Every clay when first set into a kiln contains moisture. That is so whether you have dried the brick as thoroughly as you can in a dryer or not. Clay will take moisture from the atmosphere after it has left the dryer and before you can close the wicket of the kiln. That gain in moisture

has been found to average about 3 per cent in some cases; as high as 5 per cent or 6 per cent in others. Moisture thus absorbed from the air is known as hygroscopic water. Clay takes it as readily as the atmosphere takes it. The atmosphere is full of moisture. It is very ready to precipitate and will when overcharged, drop as rain. The clay will take on water until its humidity is satisfied. We do not use the term "humidity" in that connection, however. It is a borrowed term that I have used to illustrate the point.

We do not understand why a clay should take on this hygroscopic water any more than why any other material should take on moisture, unless it is that the clay contains salts that have a strong attraction for water. That is, there are some salts, which, when exposed to the atmosphere, will take the moisture out of the air unto themselves, causing a solution of the salts. These same salts can be in the clay. If they are in the clay then can take moisture from the atmosphere into the clay just the same as they do from the open air. Now, suppose that a clay contains 3 per cent of this hygroscopic water at the time that you close the wicket. I have figured that it will cost you one ton of coal to dry out that moisture. That moisture must be driven out before you can proceed with your burning. That period you call water-smoking. Usually, the hygroscopic water is not all the moisture that you are drying out, because not all the cars as they leave the dryer are absolutely dry. There are many car loads of bricks that in the course of a day's run are not absolutely dry. It not infrequently happens that bricks are delivered to the kiln containing 10 or 15 per cent of moisture. Then there is mechanical water aside from the hygroscopic water that must be evaporated before you can go ahead with the burning.

You know how long it takes you to put a ton of coal in your furnaces during the water smoking period. You know the time that you must spend in water-smoking depends on the quality of the clay. The North Columbus Shale, and many of the surface clays that are full of sand like the Loess of the Mississippi Valley, cannot be dried rapidly. It is not, therefore, the open or loose clays that dries the easiest. Aside from openness there must be a natural tenacity of the clay. It must have an inherent strength to withstand the disruptive force of steam. So that there are two qualities of the clay that will allow you rapid water smoking. (1) Open structure. (2) Inherent strength. A clay that possesses those two qualities can be water smoked rapidly. A clay that possesses only one must be dried slower. A clay that does not possess either one, like Brother Stipes' clay, has to be dried very slowly.

In the second report of the Committee on Technical Investigation, prepared for the National Brick Manufacturers Association of the United States, I find that it requires two-thirds as much heat, that means two-thirds as much coal, to dry the brick as it does to burn the brick. If you were to use coal, or apply the heat from the coal, to dry that brick you would have to use two-thirds as much fuel to dry it as you would to bring it up to the temperature of 1200°C. You know how much time it requires to put all of that coal into the furnaces.

So far we have discussed the time required to put the coal into the fire box to bring about the drying changes. Suppose that you do put in one car of wet brick. The rest of the kiln is dry. You carry that through the water smoking period until, judging by the appearance of the smoke issuing from the stack you consider that the kiln has passed the water smoking period. Yet this one car of wet brick in there is not dry. The water is not evolved from that car load of brick with such rapidity and in such quantities that you would notice it in the gases. Never-

theless it is present. It dilutes the gas very slowly. You carry your heat on to what we call the oxidation period, when you are burning out the carbon from the clay.

Your carload of wet brick cannot catch up with the dryer bricks because it requires two-thirds as much heat to dry it as to burn it. As a consequence the carbon in bricks from that wet car is not burned out and you will have here and there throughout the kiln a seemingly unexplainable swelling of the bricks. I have seen that occur in the best of yards. It is not in the bottom or the top, but if you will take notice it will be where you place your wet brick that you will find your black core swelling. That is due not to the water that they contained at the time they were placed in the kiln but due to the retardation of the burning process by wasting the large amount of heat required to dry that carload of wet brick.

Aside from the foregoing considerations you have distribution of the heat in the kiln. I have figured that after you have finished a kiln of 50,000 brick at the average temperature, you have stored up in that kiln heat units that are equivalent to 10 tons of coal, that is figuring with the maximum efficiency of the coal. I haven't carried it far enough to calculate the amount of fuel that are in the ashes or that go out through the chimney. But you have stored up in that kiln a quantity of heat equal to at least ten tons of coal. You know that it requires more than ten tons of coal to burn 50,000 brick. You can readily realize that it requires time to get that heat thoroughly distributed in the kiln. Brick has what we know as 0.2 specific heat. That is a quantity of heat that will raise a unit volume of water one degree centigrade will only raise the same volume of clay .2 of a degree. Or in other words it takes 5 times as much heat to raise clay one degree centigrade as it required to raise the same volume of water one degree centigrade.

In other words heat enters a clay brick very slowly, relatively slowly. It requires time to get the heat thoroughly through the brick, and thoroughly into the walls of your kiln. It requires time to heat the floors and flues. Of course the bricks near the bag walls and at the top of the kiln absorb the heat first; the bricks at the floor do not get the heat until after the brick at the top have begun to be what you may call saturated with their heat. They have gotten the lion's share of the heat, and you know that very often the bricks in the top courses keep on taking a lion's share until they may be over burned while you have unburned brick in the bottom courses. There are means of controlling the draft to effect this distribution of heat, but even with the best of means so far devised it takes time to get that heat down to the bottom for to hold the top and get the bottom the heat must be transferred from the top to the bottom courses.

In the brick we have investigated this summer, burned under normal conditions, i. e., in periods ranging from 8 to 14 days, we have found that the bricks are more vitrified and impervious to water on the sides than in the center. One clay may absorb the heat faster than another, and as a consequence bricks made from certain clays can in a given time be burned to a more uniform density throughout. We did not find a single brick that had the vitrification on the inside equal to that on the outside. In fact many bricks had a skin that was fused on the outside while the inside was porous. The inside would be classed as a No. 2 paper, if they were all of that kind. I do not mean to say that this outside skin was produced in all cases by excessive heat. It may have been produced by what we call excessive reduction. Nevertheless the case is not infrequent where the bricks have been burned so rapidly as to overburn the outside and leave the inside far underburned as judged by their respective degree of vitrification.

There is another point that is, the influence of carbon in the burning of clay wares. On page 30 of the 2nd Report of the N. B. M. A., Technical committee there is an illustration showing the rate at which carbon can be burned out of clay under the most favorable circumstances. Thirty bricks, and they were only quarter size, were placed in a small muffled kiln, when burned with an excess of draft, the worst sample required 90 hours in which to burn out the carbon. If we should have carried the heat on to the vitrification point without having spent the 90 hours to burn out that carbon, we would have swollen the bricks. In the case of a fire clay it was necessary to hold the heat at 500-800°C for 70 hours, before all the carbon was burned out. The heat was held at 800 degrees centigrade, that is several degrees below redness. The drift clay, like the glacial clay we have here, burned out in 10 hours under those same conditions. Some clays will permit of the burning out of the carbon readily; some will not; some require an extended time.

In our discussion this morning as to the rapidity with which you can burn clays, it has been shown that it depends on the clay. Because one man may require a longer time, it does not follow that the Chicago man cannot burn his clay in 90 hours. We have seen descriptions of kilns in which the patentee claims that he can burn several thousand bricks in one or two days time. You will note that the specifications will invariably state that they will finish the burning in two days. They have given it a pre-heating. It may be a tunnel kiln or a continuous kiln. It may be a shaft kiln, after Brother Butterworth's design. In each of these cases they have burned out the carbon; and dehydrated the clay so that the time required to finish burning the brick is spent wholly in completing vitrification. In a tunnel kiln the bricks are in small units so that two days is ample to thoroughly and uniformly distribute the heat, not only in all parts of the chamber but throughout each brick. Size of kiln, in other words, effect very materially the rate at which clay wares may be burned.

Mr. Richardson: Did you say that there were the equivalent of 10 tons of coal in heat units in a kiln of 50,000 bricks at the close of the burn?

Prof. Purdy: If desiring those figures I took a 30-ft. round down draft kiln figuring in the floors, walls, crowns, etc. I believe that in a furnace you don't get nearly 50 per cent efficiency. Therefore my figure was very low. I think it is more like 15 or 20 tons. This is 50,000 brick in a round kiln.

Mr. Richardson: The point is did you figure the kiln wall itself.

Prof. Purdy: Yes.

President Stipes: The report of the Committee on Resolutions is the next on the program.

REPORT OF COMMITTEE ON RESOLUTIONS.

Whereas, the Illinois Clayworkers Association in convention here at Champaign, is terminating a most interesting and profitable meeting, one which augurs favorably for the future of our organization, therefore be it

Resolved, That the thanks of the Association be given to its officers for their efficient services and their manifest interest in its work.

Resolved, That the Association confesses its inability to fitly express its sense of appreciation of the hospitality of its Champaign and Urbana hosts. To the University faculty it extends a sincere "thank you" for the undiminished interest and assistance and to President James and Profs. Breckenridge, Case, Hall, Mumford, Bain, and all who

have participated in their active co-operation with us, we tender our thanks.

Whereas, We are proud of our Ceramic School and its splendid record, which shows that its progress since its inception has been greater than that of any other previously established Ceramic School in the country.

Resolved, That the Association herewith expresses its realization of the magnificent work of Professors Rolfe and Purdy and their assistants, and herewith declares its intention to support them in every way possible throughout the coming year, especially by using the individual influence of its members to obtain the legislative appropriation necessary for the furtherance and extension of our ceramic work.

Whereas, Life is short and good men are few and it is desirable to speak well of men while they are still alive and with us. Therefore, be it

Resolved, That the Association tells John W. Stipes, its "untainted" president for three years, that it desires him to feel secure in occupying premier place in its regard and esteem. May he see many years of prosperous life and continued association with us is the sincere wish of the Association.

Whereas, The present legislative committee has proved its efficiency by its past activity and successful efforts, and

Whereas, The enlargement of the committee has been found desirable for the carrying of future work. Be it

Resolved, That the present Legislative Committee be continued and the names of W. M. Pratt, Earlville, and J. M. Mamer, Campus, be added to that committee.

Signed.

HARRY DE JOANNIS, *Chairman*.

J. M. MAMER.

C. C. BARR.

W. M. PRATT.

President Stipes: The report has been seconded and is unanimously adopted.

President Stipes: The report of the treasurer, which was also the report of the secretary follows on the program. We will hear from Treasurer Hammerschmidt.

TREASURER'S REPORT 1907

Balance on hand.....	\$ 67.87
Dues for 1907.....	85.00
	\$152.87

EXPENDITURES.

Stationery	\$ 15.25
Badges	17.05
Postage	2.00
Postage and phone.....	23.50
Typewritten letters	5.40
R. R. transportation.....	7.11
R. R. transportation.....	9.66
Hall rent	20.00
Hotel entertainment	14.73
Secretary fee	15.00
	\$129.70

Balance in Treasury..... \$ 23.17

President Stipes: The report has been seconded and is adopted unanimously.

President Stipes: Three letters from Peoria inviting the association to meet there next year have been received by the secretary, one from the mayor of Peoria, another from the National Hotel, and the other from three business and

social clubs jointly. They all offer us a good time and treatment.

Mr. Mamer: I move that the matter of the next meeting place be left to the Executive committee for them to decide later, as is required by the by-laws of our Association.

President Stipes: The report of the Committee on Nominations is the next on the program. We will hear from them.

REPORT OF COMMITTEE ON NOMINATIONS.

Your committee on nominations hereby nominate the following for the offices of this association for the coming year:

For President—Walter M. Pratt, Earlville.

Vice President—J. H. Mamer, Campus.

Secretary—Geo. H. Hartwell, Chicago.

Treasurer—Wm. Hammerschmidt, Lombard.

Respectfully submitted,

D. C. HAEGER.

L. H. MARTIN,

GEO. G. WALTER.

President Stipes: The report has been seconded and the named officers are declared elected.

President Stipes: I wish to thank you all for coming to Champaign for the last three years, and I will say furthermore that it has given me great pleasure to meet you and help to entertain you, and at any time you come back again, individually or as an organization—and I hope you will do so often in both capacities—just remember that Champaign is ready to receive you and do the best it can for you. And when you come here individually, don't forget that you will find me here ready and glad to do the best I can for you.

There were many calls for Mr. Pratt, the newly elected president, and he received an ovation on his appearance at the side of ex-President Stipes.

Mr. Pratt: Gentlemen of the convention, I feel very weak to take the chair after our friend has done so well for us, but I will pledge myself to do the very best that lies in my power for the furtherance of the interests of the Illinois Clay Workers Association and also for the Clay Working School, whose success I know that we all have at heart. I thank you very much.

It was then moved and seconded that the Executive Committee be instructed to settle on the date and the place of the next meeting, and their announcement to be made not later than the 1st of September; also that the program be decided upon not later than the 1st of October of this year, so that those who had papers to prepare might have opportunity to do so. This motion was carried.

Thus the 29th annual convention of the Illinois Clay Workers' Association was ended.

ILLINOIS CLAY WORKERS' ASSOCIATION 1907

John W. Stipes, Sheldon Brick Co.....Champaign, Ill.
William Hammerschmidt, Lombard Brick &

Tile Co.Lombard, Ill.

Geo. H. Hartwell, "Clay Record".....Chicago, Ill.

J. H. Millsom, Illinois Mfg. Co.....Macomb, Ill.

H. J. Shaw, Shaw, White & Co.....Vandalia, Ill.

H. H. Thomas, Oblong Mfg. Co.....Oblong, Ill.

W. M. Pratt, Pioneer Brick & Tile Works...Earlville, Ill.

R. O. Lovett, Sheldon Brick Co.....Champaign, Ill.

Frank Leasure, Sheldon Brick Co.....Champaign, Ill.
 Charles Burrige, H. Brewer & Co.....Tecumseh, Mich.
 D. C. Haeger.....Dundee, Ill.
 E. R. Frazier, Chambers Bros. Co.....Chicago, Ill.
 C. A. Pech, Buckeye Pottery Co.....Macomb, Ill.
 G. C. Stoll, American Clay Mchy. Co.....Wheaton, Ill.
 H. J. Votaw, The J. D. Fate Co.....Plymouth, Ohio
 J. T. Underwood, Underwood Pressed Brick
 Co.Springfield, Ill.
 George B. Roller.....Canton, Ill.
 Ross C. Purdy, University of Illinois.....Champaign, Ill.
 Charles Raymond, Jr., C. W. Raymond Co...Dayton, Ohio
 E. W. Plummer, Madden & Co.....Rushville, Ind.
 Herman Bredenkamp, 1st Ave. Brick & Tile
 Co.Evansville, Ind.
 D. D. Deeds, Thew Automatic Shovel Co.....Lorain, Ohio
 Fred Talbot, Laclede Fire Brick Mfg. Co...St. Louis, Mo.
 Joe Watts, Watts Brick Yard.....Newton, Ill.
 John Stipes, Jr., Sheldon Brick Co.....Champaign, Ill.
 Roy Stipes, Sheldon Brick Co.....Champaign, Ill.
 Carl Ericson, Ericson & Skiles.....Virginia, Ill.
 Smith Wisegarver.....De Land, Ill.
 S. B. Loyd, Farmersville Brick & Tile Co., Farmersville, Ill.
 L. D. Swodgrass, Springfield Pressed Brick
 Co.Springfield, Ill.
 Arthur Gillett, Aledo Brick & Tile Co.....Aledo, Ill.
 T. A. Vernon, Aledo Brick & Tile Co.....Aledo, Ill.
 S. R. Ellis, Ellis & Son.....Canton, Ill.
 J. E. Randall "Clay Worker".....Indianaolis, Ind.
 Oscar Frazee.....Moweaqua, Ill.
 Geo. F. Beardsley.....Champaign, Ill.
 A. Barr.....Urbana, Ill.
 S. P. Atkinson, Atkinson Monument Co...Champaign, Ill.
 W. J. Lee, Sheldon Brick Co.....Urbana, Ill.
 L. Brown, Ohio Ceramic Eng. Co.....Cleveland, Ohio
 John B. Burnett.....Urbana, Ill.
 C. C. Barr, Barr Clay Co.....Streator, Ill.
 C. L. Martin.....Dwight, Ill.
 L. H. Martin.....Dwight, Ill.
 F. A. Martin.....Mazon, Ill.
 Ed. Lee, Sheldon Brick Co.....Champaign, Ill.
 Harry de Joannis "Brick".....Chicago, Ill.
 Geo. J. Walter.....Chatsworth, Ill.
 Herbert Simpson, National Brick Mchy. Co...Chicago, Ill.
 H. K. Keller, Sheldon Brick Co.....Urbana, Ill.
 H. G. Moore, Sheldon Brick Co.....Urbana, Ill.
 Geo. W. Rhea, W. E. Lyon & Co.....Carthage, Ill.
 C. W. Rolfe, University of Illinois.....Champaign, Ill.
 J. M. Powell, Indiana Drain Tile Co.....Brooklyn, Ind.
 J. H. Hutson, Sheldon Brick Co.....Urbana, Ill.
 E. F. Anderson, Sheldon Brick Co.....Urbana, Ill.
 J. M. Gearhart, Sheldon Brick Co.....Urbana, Ill.
 J. M. Mamer, Mamer Bros.....Campus, Ill.
 J. W. Hensley.....Indianapolis, Ind.
 Oliver Tilbury.....Towanda, Ind.
 Fred Titterington, Argillo Works.....Rock Island, Ill.
 Wm. Gerhardt, Argillo Works.....Carbon Cliff, Ill.
 F. G. Matteson, Purington Paving Brick Co. Galesburg, Ill.
 W. S. Purington, Purington Paving Brick
 Co.Galesburg, Ill.
 W. D. Gates, Gates Potteries.....Chicago, Ill.
 H. E. Search, Dunlap Mfg. Co.,.....Bloomington, Ill.
 L. H. Lambert, H. Lambert & Son.....Beaverville, Ill.
 D. O. Loy,Wataga, Ill.
 J. W. Robb, Clinton Paving Brick Co.....Clinton, Ind.
 Will P. Blair, Terre Haute Vit. Brick Co..Terre Haute, Ind.
 F. I. Clotfetter, Hillsboro Brick & Tile Co....Hillsboro, Ill.
 John MatingleyUrbana, Ill.
 S. M. Cowgill, National Drain Tile Co..Terre Haute, Ind.
 John Hummert, Gem City Brick Co.....Quincy, Ill.

F. R. CarterE. Peoria, Ill.
 Robert UnzickerPeru, Ill.
 John C. Shea, DanvilleDanville, Ill.
 E. L. Hess, E. M. Freese & Co.....Galion, Ohio
 G. S. Brubaker, H. Brewer & Co.....Perryburg, Ind.
 Herman C. Steinmayer, LaSalle Pressed
 Brick Co.La Salle, Ill.
 Albert Potts, C. & A. Potts & Co.....Indianapolis, Ind.
 M. T. Goss, Goss Engineering Co.....Chicago, Ill.
 Frank W. Butterworth, Western Brick Co....Danville, Ill.
 W. D. Richardson, Richardson-Lovejoy Eng.
 Co.Columbus, Ohio.
 M. W. BlairChicago, Ills.

CALIFORNIA BRICKMAKERS' FIGHT CON- CRETE WORKERS.

The Bricklayers' Union of San Francisco, Cali., recently decided to prohibit its members from laying brick around concrete or on re-enforced concrete buildings. As a result of this action the bricklayers stopped work on the Humboldt Bank and one or two of the other large buildings in course of construction.

The Bricklayers' Union has fought against the progress of concrete construction and made a determined though unsuccessful effort to defeat that provision of the building ordinance which was passed shortly after the fire, and which gave recognition to 're-enforced concrete buildings.

The bricklayers threaten to boycott all concrete buildings and every other branch of the building industry connected with them. General President Bowen of the bricklayers and masons is counseling and advising with the officers and members of the Bricklayers' Local Union, No. 7.

The Cement Workers' Union, No. 1, of the American Brotherhood of Cement Workers, has grown at a tremendous rate since the fire, and this organization stands on its rights and the trade jurisdiction granted to it by the Building Trades Council of San Francisco, the State Building Trades Council of California and the American Federation of Labor.

These organizations have given to the Cement Workers all concrete wall, floor or foundation work, re-enforced concrete work of every character, copings and steps, the setting of shop made concrete steps, concrete floors, all floor work of every character of concrete or other plastic material with a cement base, concrete sidewalks, cement or concrete, imitation stone plastering on wood, wire or metal lath or brick, cement mold work and all framing for the same; cemetery improvements, composed of concrete, all foundation framing, sidewalk lights set in cement, and all other concrete construction.

The bricklayers claim that if concrete buildings are to be erected, they should belong to the bricklayers, and that the cement work originally belonged to the masons' trade. This, of course, is strenuously denied by the Cement Workers, who claim that their industry is a product of the evolution and progress of building construction. They maintain that a cement worker is an expert and specialist at his trade, and although they are willing and anxious to work in harmony with all the other building trades and all union men in general, still they will resist encroachment upon their rights as determinedly and strongly as men who are used to handle cement and make indestructible fortifications and monuments.

What the next move will be that the bricklayers will make remains to be seen.

THE USE OF WASTE HEAT FOR DRYING AND BURNING*

BY WM. BAILLIE, ESTEVAN, ASSN.

This very important subject has been taken up in the N. B. M. A. for the last three or four years. It has been discussed each time with the utmost attention, hoping to find out the practicability or impracticability, the profitability or unprofitableness of taking heat out of continuous kilns to dry the brick in a drier.

This subject has never yet in all its discussions reached a stage where it could be either rejected as no good, or accepted as a profitable system. Fuel is getting higher in price, and in most brick plants, there is much waste heat which is useless for the kilns, but can be utilized for the purpose of drying plastic brick.

I am in a position to definitely decide that the "waste-heat system" in connection with continuous kilns is practicable without the use of any extra fuel whatsoever, and I know some of the trade are using it with some measure of success and will back my statements that the useless waste heat, useless as far as the kiln is concerned, is profitable to dry all the brick, perfectly dry, that the kiln can burn.

Four years ago, I studied the subject closely. I had two 16-chamber kilns, and in observing the cooling of the lower chambers, behind the firing chamber, I found that the cold air would soon creep up upon the last chamber finished burning, and to prevent this cold air from getting up too close to the unfinished chamber, it was necessary to do what is termed "back-fire."

Now then, here is the point that most continuous kiln burners are aware of. There are four chambers cooling, the chamber next the drawers is black, but the caps are all off so as to cool it quickly and the door pulled down; on top of the kiln you will find a powerful pure hot air coming up through all the feed-holes, and lost.

The next chamber will be found red-hot but black in the bottom, above the jets where the cold air is rushing towards the stronger fire; the feed-holes of this chamber are also open and the red heat is pressing up through them and lost.

And so it is with the third chamber from the drawers. In this chamber there is a very bright red heat, also black in the bottom, above the jets or flues, but the caps are still on.

All this heat is waste and useless, at this section of the kiln, to assist the burning, as the air-current is away below and has no power to pull it down from the body of chamber and mix with the cold current. But take off the feed-caps then the large volume of heat left in this chamber will rush out of the feed-holes with great force and thus it is a valuable heat lost. I will confine myself expressly to "waste heat" in this paper and with the two 16-chamber kilns I had at the time I found that it was impossible for me to save this waste heat for drying purposes, as these two kilns were not constructed for the purpose.

The Laprairie Brick Co., over two years ago, decided to build a new plant, which was immediately begun and I made new plans for continuous kilns for the express purpose of

using the waste heat. I built two 16-chamber kilns and a drier. The drier is entirely fireproof and cheaply built. I use no iron tubes to convey the heat to the drier from the kiln nor any long iron drums on top of the kiln. The distribution is effected by a system of dampers in the kiln walls for each chamber, which is unexposed. There is a large flue through the center wall of the kiln and with a 24-in. square damper from each chamber in this flue or conduit, so that at will, when you have a chamber with remaining heat of no further use, it can be admitted to the drier.

Again, this flue is never cold and serves a double purpose. There are from three to four chambers under fire; there are from three to four chambers cooling, but full of fire; a stretch of eight chambers. The radiation from these into this flue through a 2-ft. brick wall is considerable, and will alone supply continuous hot air to the drier, even without taking it from the chambers; but not quite sufficient to dry enough brick for the full capacity of the kiln without the assistance of the waste heat from the chambers.

Some of our craft have insisted that there is no waste heat in a continuous kiln, and consequently brick cannot be dried with heat from one, except at the expense of extra fuel. I have already shown there is waste heat and lots of it, and I will not prove my assertions that the use of waste heat from continuous kilns is both profitable and practicable, providing the kilns are built to suit the purpose.

I wish to prove it in the following way, which, I think, will be convincing:

My company, last winter, finding the two kilns at the new plant such a large saving, both in fuel and labor, decided to pull down the two "continuous kilns" in the old plant and rebuild them on the waste-heat system as already done in the new plant. There was also a steam drier on the old plant with many thousand feet of steam pipe. This, too, was pulled out and the tunnels made fireproof to suit the waste heat from the continuous kilns just rebuilt, and the brick came out of the drier in better condition than from the steam drier.

The drier is run by an electric motor, the surplus heat escaping through doors provided for the purpose, when not wanted.

The fan must be continuously working in order to keep the chambers cool and free from dust and also keep the kilns working fast.

I have proved the waste-heat system a success. The fact of the company pulling down continuous kilns and reconstructing them to be adapted to this system, after proving to their entire satisfaction and by figures that the saving from the waste-heat system would soon pay for such reconstruction, is a sufficient basis for my assertions.

In addition I may mention that the Laprairie Brick Co. is now building two more 16-chamber kilns, nearly double the capacity of the latest, and built on the waste-heat system. This plant is figured to have next season a capacity of nearly 300,000 daily. Although I have treated this subject with confidence, I feel that some of our fellow craftsmen will doubt. Still I feel gratified that those who have tested it know it to be good.

Since we have the continuous kiln harnessed successfully

*Read before the Canadian Clay Products Manufacturers at Toronto, Dec. 14, 1906.

to give up for practical use such waste heat not wanted for burning but very useful for drying the green material, I will touch on the vast amount of waste heat lost in down-draft kilns. It is true that in some places they draw the heat off the down-draft kilns for drying purposes and when a down-draft kiln is fired off with, say, 150,000 or over of brick, at a white or near white heat, the utilization of this vast body of heat after it has done its work at burning is very important. As already remarked, some plants use it for the purpose of drying, but this is only necessary where plastic brick is made to draw the heat from a down-draft kiln to a tunnel drier or any other kind of drier, and can be easily done.

Where dry-pressed brick only are made, no drier is necessary. The next thing is how shall we use this vast amount of waste heat from down-draft kilns where dry-pressed brick are made only and get the benefit thereof. This subject is also practical and has been proven a success.

There is a battery of four down-draft kilns on the Laprairie Brick Co.'s new plant. Each kiln holds 155,000 brick. A system of underground flues run along both ends of the row of four kilns; more kilns can be added if desired with still better results, but four is the least that can be worked. These kilns on top are all connected with a 36-in. iron tube so that the waste heat can be taken out of one finished kiln and drawn down in the next kiln just filled. It is well known that dry-pressed brick need a low heat to start watersmoking. In some places, according to the material, they have to go very slow for several days; others can go much faster. To get a low degree of heat to start watersmoking, the writer introduced a system of small flues all over the arch of the kilns to the main conduit, or in other words, it is one light arch on top of the main arch. The main arch gets nearly red-hot below the light arch.

To start watersmoking a kiln we get sufficient heat to start the first twenty-four hours, or longer, as found necessary to suit the material; then as more heat is required, a hole in the main arch can be opened, and as more heat is required more holes can be opened until the kiln is dry and hot enough to receive a coal fire. We watersmoke our kilns at Laprairie in four days, and if closely attended to they can be burned in six days.

Now, then, what is the saving by this waste-heat system?

The following are the figures. Formerly it took six days to watersmoke with wood.

Two burners, 1 for night, 1 for day, 6 days.	\$ 24.00
One man wheeling wood, etc.....	9.00
Fifteen cords of wood at \$4.50 per cord....	67.50

Saving on each kiln.....\$100.50

The waste-heat fan is run by a motor so that, while watersmoking, the kiln needs no attention whatever, only once a day a few minutes to increase the heat, as required.

I have been asked the question often: "Is it more economical to burn plastic brick in down-draft kilns or up-draft?" It is known the world over that the down-draft kilns are the best for high-grade face brick, and also for paving-brick burning, but for common plastic building brick, the continuous is much better and most economical.

KANSAS GAS BELT BRICKMAKERS FILE A COMPLAINT AGAINST RAILROADS FOR CAR SHORTAGE.

Independence, Kan.—Frank J. Ryan of Leavenworth, Kan., a member of the state board of railroad commissioners, was in the city today making a few inquiries and taking some mental notes available for use in a meeting of the board to be held at the instance of the Kansas Gas Brick Manufacturers' association at Cherryvale a month hence.

An informal meeting of the association with Mr. Ryan was held at Cherryvale the day before. The brick manufacturers had complained to the railroad commission, that the Santa Fe, Missouri Pacific and other roads have discriminated against them in the matter of apportioning cars.

At the Independence meeting, A. C. Stich and Manager McClaren of the Western States Cement Co. represented Independence; W. T. McClung, Mound Valley; H. F. Reid, Parsons; E. R. Dick, Coffeyville, and C. H. Cole, Springfield, Mo. These gentlemen put the matter of the car shortage before Mr. Ryan, who after consultation with the representatives present, advised them to file a formal complaint against the railroads, as the best plan to get the matter squarely before the board of commissioners for adjustment. The association acted upon the suggestion and charges were preferred which will result in a formal inquiry to be held at Cherryvale, probably about April 1.

J. J. Amos of Humboldt, president of the Brick Manufacturers' association, presided at the meeting and it was adjourned subject to his call.

Mr. Ryan will file the complaint of the brick men with the commission and the hearing will be held as stated above.

Independence knows well enough what the car shortage means. Some of this city's largest industries have been seriously crippled for months owing to a lack of cars with which to transport manufactured products.

The railroads have dealt out the cars in broken periods when any were received at all, and then the number was only sufficient to partly relieve congestion and advance the work of the manufacturing plants.

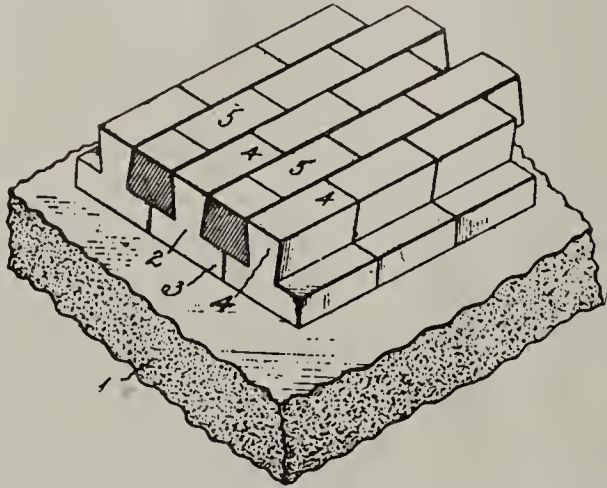
In the matter of apportionment the brick makers feel that they get the worst of it, and now they want to know why. Mr. Ryan saw enough in the situation as presented to convince him that an investigation was needed and it will, therefore, be ordered.

"I was surprised at the magnitude of your resources and industries," said Mr. Ryan. "Of course I knew you were in the oil and gas belt, but we people up in the other corner of the state little realized what you were really doing down here. Instead of small, struggling cities, with only a live one here and there, you have in this section cities of 15,000 and 16,000 which are having a marvelous growth and your industries are doing a volume of business which is only appreciated by a close investigation. I feel sure that when I present this matter to the board and show them what you are doing down here and how badly you need relief in the matter of transportation they will be as earnestly interested as I am now and will be eager to come and see what can be done to help matters."

NEW INVENTIONS THAT ARE OF INTEREST TO THE CLAY MANUFACTURER

These new inventions are those that are especially of interest to anyone engaged in the line of building materials and their manufacture, or machinery to make them:

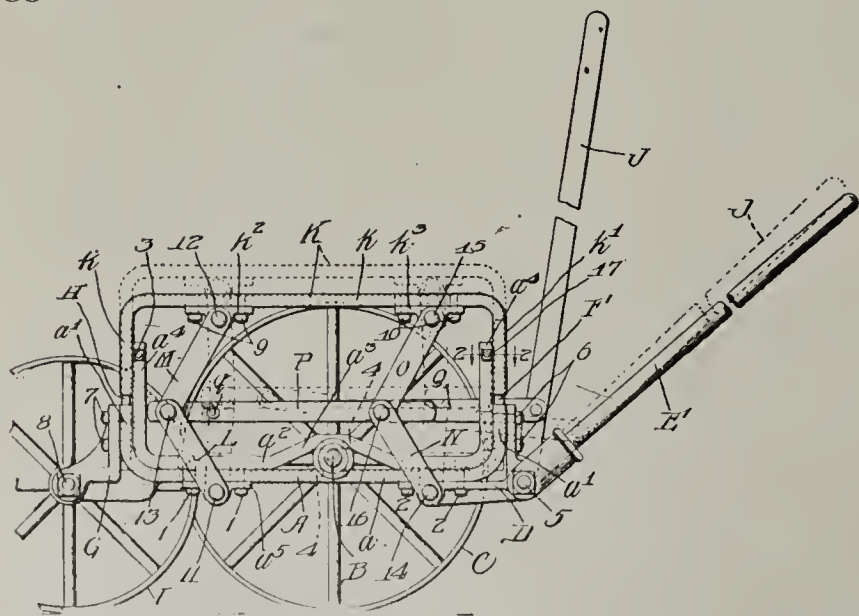
841,647. Pavement. Edward Heylyn, Manchester, Conn. Filed March 9, 1906. Serial No. 305,096.



Claim.—A compound pavement formed of abutting blocks of hardened plastic compound, each block having a wide flat base and a dovetail wearing-rib narrower than the width but as long as the length of the base, extending upwardly from the middle thereof, and dovetail locking-strips of wood lying between the wearing ribs and overlapping the longitudinal and the transverse joints so that each strip rests upon sections of the bases of four blocks, substantially as specified.

841,683. Vehicle for Carrying Brick. John J. Gledhill, St. Louis, Mo. Filed Sept. 9, 1905. Serial No. 277,788.

Claim.—A vehicle for carrying brick, comprising a rigid body-frame mounted on wheels, a bail-shaped handle rigidly secured to one end of said body-frame, a brick-support mounted to slide up and down on said body-frame, a plurality of toggle connections connecting the brick-support to the body-frame, said toggle connections being adapted to break joint away from the handle in order to lower the brick-support, and adapted to break joint in a direction toward the handle for the purpose of retaining the brick-support in a raised position, and a hand-lever associated with said pushing-handle and connected for operating said toggles.

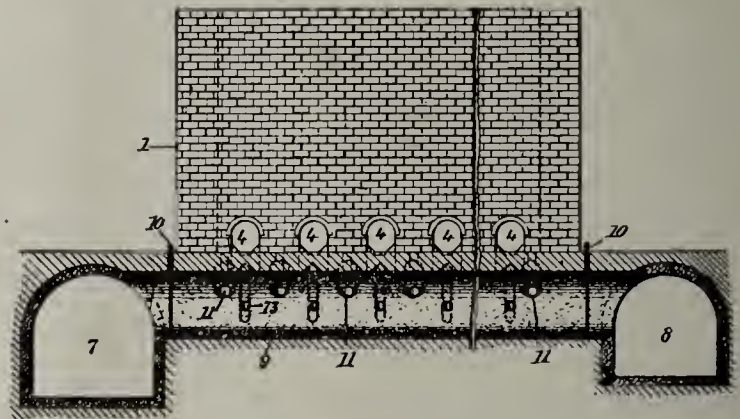


A vehicle for carrying brick, comprising a body-frame composed of parallel and longitudinally arranged channel-irons, one channel-iron being arranged on top of the other at each side of the vehicle, an axle extending across and secured between the said upper and lower channel-irons, said channel-irons having their front and rear ends upturned and provided with vertical guides, wheels mounted on said axle, a brick-support composed of parallel and longitudi-

nally-disposed channel-irons having their end portions bent down and adapted to slide up and down on said guides, toggles connecting the brick-support with the body-frame, a handle rigid with the body-frame, and a swinging hand-lever connected for operating said toggles, whereby the brick-support can be raised and lowered by operating the hand-lever.

842,043. Brick-kiln. Charles K. Weller, Atlanta, Ga. Filed July 24, 1906. Serial No. 327,538.

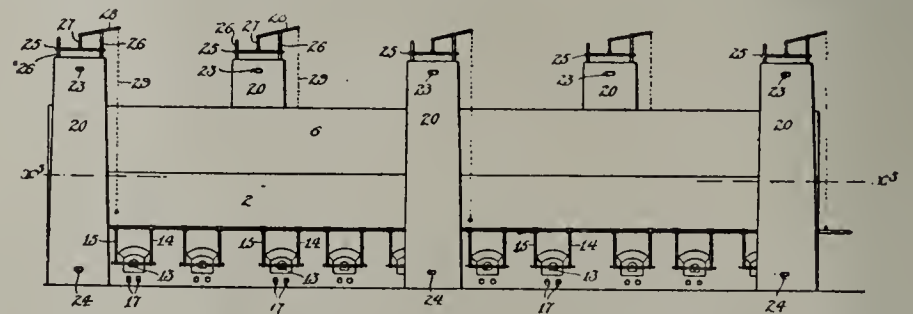
Claim.—A brick-kiln having suitable walls, a plurality of furnaces in two of the oppositely-disposed walls, a grate in each of said furnaces, an air-supply pipe, branch pipes connected to said supply-pipe and delivering to each of the furnaces beneath the grate thereof, a damper in each of said pipes, a trap in each of said pipes, and a hood over the delivery end of each pipe and serving to prevent the entrance of foreign matter thereto.



A brick-kiln having a floor provided with a plurality of open-ended troughs, suitable walls having furnaces located therein and alternately disposed in respect to said open-ended troughs, a grate in each of said furnaces, an air-supply pipe beneath said floor and to one side thereof, branch pipes connecting said supply-pipe with each of said troughs, branch pipes connecting said supply-pipe with each of said furnaces beneath the grate thereof, a trap and a hood in each of the last-mentioned branch pipes, and a damper in all of said branch pipes.

841,789 Kiln. Gustav Larson, Los Angeles, Cal., assignor, to Los Angeles Pressed Brick Company, Los Angeles, Cal., a Corporation of California. Filed Feb. 21, 1906. Serial No. 302,178.

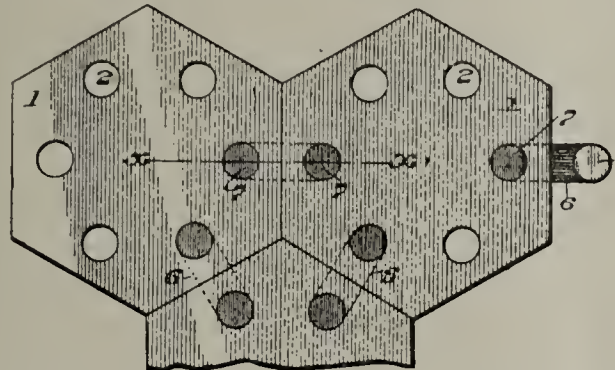
Claim.—A kiln comprising a top, floor, and walls, means for maintaining a plurality of heat-currents having opposite directions of movement under the floor, means for conducting currents of one direction vertically on one side and for conducting currents having the other direction vertically on the other side, means for causing all currents to descend through the floor, and means for conducting currents after passing through the floor, successively in opposite directions and parallel with the adjacent currents so that each outgoing current passes by the adjacent currents, all of the heat-currents under said floor being in contact therewith.



A kiln comprising a top, floor, and walls, the side walls having fireplaces, horizontal flues under the floor communicating with the fireplaces, injector-burners at the fireplaces, vertical flues inside the kiln communicating with the horizontal flues, other flues under the floor for carrying off the heat-current, the floor having openings into the latter flues, and chimneys communicating with the latter flues.

841,998. Tile Flooring. Logan W. Mulford, Philadelphia, Pa. Filed Feb. 20, 1906. Serial No. 302,003

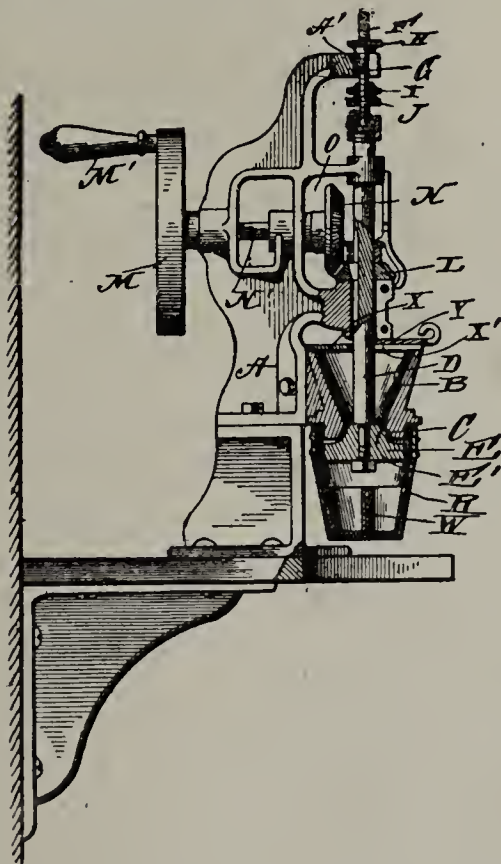
Claim.—A tile for flooring and the like, of a shape adapted to coincide edgewise when assembled in series, having an aperture extending through the body portion thereof in the direction of its thickness, a filling in said aperture of a harder material than the body portion of the tile, and with means integral therewith adapted to interlock a body of such tiles in series.



In a device of the character described, tiles having apertures therethrough, the walls of said apertures being serrated, and a locking member having projections thereon adapted to be seated in apertures of different tiles, the upper end of said locking member being substantially flush with the upper surface of the tiles.

841,921. Combined Pulverizer and Sampler. Oscar C. Beach and Arthur L. Buzzell, Los Angeles, Cal., assignors, by mesne assignments, to Frederick W. Braun, Los Angeles, Cal. Filed March 21, 1906. Serial No. 307,242.

Claim.—An apparatus for pulverizing and dividing frangible materials, comprising a frame having a laterally-extending arm which is provided with an open slot, a stationary grinding-plate having an opening therein, a screw positioned in said slot and provided with a head at its lower end, a nut mounted upon said screw and resting upon said slotted arm, a vertically-mounted shaft swiveled to said head, a grinding-plate fixed to the bottom of said shaft, and means for rotating the latter, as set forth.

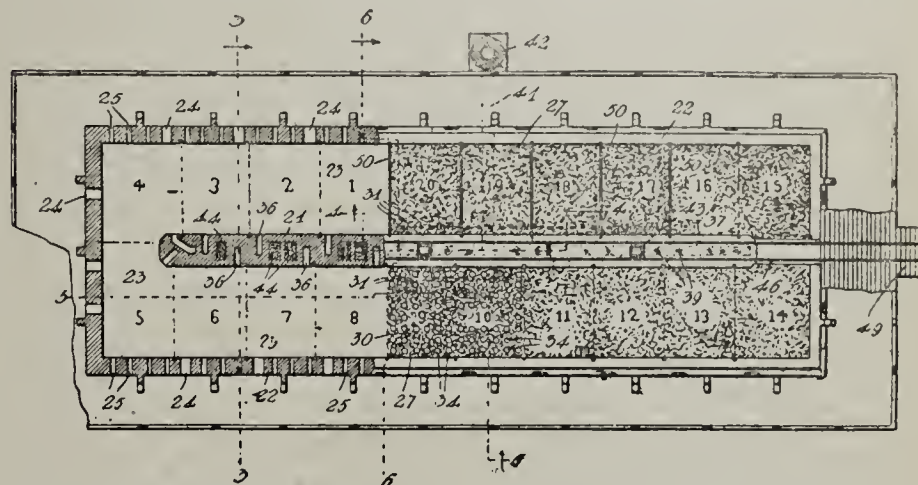


An apparatus for pulverizing and dividing frangible materials, comprising a frame, a stationary grinding-plate having an opening therein, a hopper, a vertically-adjustable shaft, means for supporting the same, a grinding-plate fixed to the bottom of said shaft, screws projecting from the flange of said hopper, a receptacle having ears with oppositely-disposed slots therein adapted to receive said screws,

nuts upon said screws for holding the receptacle in place, and dividing-cups within said receptacle, as set forth.

841,947. Kiln. Paul Chmelewski, Helsingfors, Russia, assignor to Anna Mathilda Chmelewski, Helsingfors, Finland, Russia. Filed Aug. 23, 1906. Serial No. 331,761.

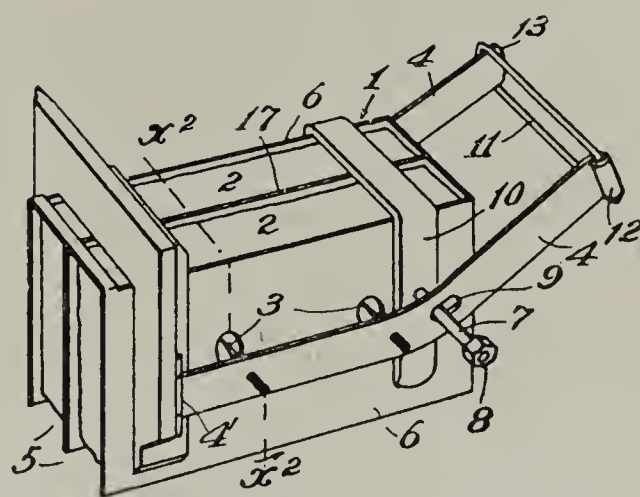
Claim.—A kiln of the character described, comprising an inner wall, an outer wall surrounding the same and spaced therefrom to form a continuous chamber, said outer wall having filling-openings and fire-openings, removable partitions between said walls for dividing said continuous chamber into separate compartments, temporary tops supported upon brick masses or the like in said chamber and having



outlet-openings formed therein, said inner wall having a smoke-passage communicating with the compartments of said chamber, valves for controlling the communication between said passage and said compartments, fire-passages in said temporary tops, and removable closures for said fire-passages, substantially as described.

841,788. Means for Making Stone-Faced Brick. William Lammersen, Los Angeles, Cal. Filed Feb. 23, 1906. Serial No. 302,398.

Claim.—A frame adapted to receive a brick or like body, means mounted on the frame to engage said body and hold it in determined position therein; an edge of said frame being open to receive plastic material for application to said body, the sides of said frame being adapted to give form to the edges of the plastic material when applied to said body.



A frame provided with a longitudinal partition and with an opening at an edge and provided with openings in its sides, handles fastened to the frame and provided with adjustable points projecting through said openings, and means for fastening said handles together.

The Buffalo (N. Y.) Forge Co. have recently closed contracts for heating and ventilating apparatus for the Geographical Laboratory, Carnegie Institute of Washington, Keystone Watch Co., Philadelphia, Pa.; J. J. Howden & Co., Muskegon, Mich.; Hood Furnace & Supply Co., Corning, N. Y., and the Electric Wheel Co., of Quincy, Ill.

CLAY RECORD.

CLAY RECORD.

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GEORGE H. HARTWELL, Editor.

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ENTERED AT THE CHICAGO POST OFFICE AS SECOND-CLASS MATTER.

Vol. XXX.

MARCH 15, 1907.

No. 5

"I like to read American advertisements. They are in themselves literature, and I can gauge the prosperity of the country by their very appearance."—William E. Gladstone.

When times are dull and people are not advertising is the very time that advertising should be the heaviest. Ninety-nine out of every hundred merchants advertise most when there is least need of it, instead of looking upon advertising as the panacea for their business ills.—John Wanamaker.

If a man has one enemy he has enough.

Lazy men are always telling about some other men who are fools for luck.

Oh, no, Alphonse, a man isn't necessarily one-sided because he has never crossed the ocean.

It is as easy to get the reputation of being a "good fellow" as it is hard to get rid of it when age brings wisdom.

When a man frankly admits that he was in the wrong it is equivalent to his saying, "I am wiser today than I was yesterday."

When a man is sick, he doesn't pay much attention to the doctor's advice until he happens to see an undertaker's wagon pass the window.

"Whether the advertiser gets full value from a publication depends on the publication and partly on his skill in presenting his product; but the subscriber, as a rule, has only himself to blame if he fails to make a very large profit on a very small subscription investment. There are comparatively few trade journals that deserve consignment to the waste basket in their original wrappers."—Ex.

Are you doing your duty? Subscribe now for the Clay Record, it is the only clay journal that is published twice a month in America. It is a duty that you owe to yourself to take the clay journals and keep posted as to what is going on in the industry. Try the Clay Record for a year. It costs only one dollar.

The average clay worker attributes most of his short comings and failures to a lack of time. He is always rushed. We have seen clayworkers who actually gloried in telling how far behind they were with their work; it becomes a chronic ailment, but it is only the man who hasn't time to think who believes that it is incurable.

One of the most successful clayworkers of this state, who, by the way, always has plenty of time for each season's work, affirms that if clayworkers would work longer hours with their brains and less with their muscles they would have more time for both.

There is a great deal of truth in the above statement, for it is an undeniable fact that the greatest stumbling block in successful clay working today is not the high price of labor, the uncertainties of the weather or the intrigue of capitalists combining, but simply the lack of system and foresight in executing the ordinary round of labor in clayworks.

Men rely too much upon pure strength. Always take time and think.

BUILDING OPERATIONS FOR FEBRUARY.

Viewed in a broad way the building statistics from some fifty leading cities throughout the country for February, 1907, are as satisfactory as could be expected by those who are well informed as to the building movement for the past few years. As compared with the corresponding month of last year there is, in the aggregate, quite a decided falling off. This was to be expected, since a constant increase was out of the question, particularly in cities where all records, all anticipations, have been broken and surpassed. In those cities, even, that have been subjected to the greatest loss, the business reported is still of great proportions, far in excess of anything recorded before the development of the building movement of the past four years. This is the waiting season, and developments as to labor, the price of material and other matters may lead to much more extensive operations in the near future. While no boom is in sight construction, in general, is in a healthful condition.

The percentage of gain in the leading cities, as compared with February, 1906, is indicated by the following figures: Atlanta, 100; Chattanooga, 57; Dallas, 43; Denver, 3; Detroit, 43; Duluth, 128; Kansas City, 29; Memphis, 57; Mobile, 924; Omaha, 17; Portland, 189; St. Louis, 4; St. Paul, 149; Seattle, 304; Syracuse, 78; Tacoma, 131; Worcester, 97. Leading cities show the fol-

lowing percentage of loss: Buffalo, 9; Cleveland, 31; Dallas, 54; Harrisburg, 26; Hartford, 93; Indianapolis, 57; Louisville, 77; Milwaukee, 54; Minneapolis, 69; Nashville, 31; Newark, 7; New York, 30; Philadelphia, 67; Rochester, 22; Salt Lake City, 17; Toledo, 46; Washington, 97.

OBITUARY

William Dunn, an old and prominent resident of the Sixth ward, Pittsburgh, Pa., died suddenly at his home. He was born in Ireland and came to this country while young. He was engaged in brick manufacturing at Brad-dock until a few years ago, and later was superintendent of the laborers at the Homestead works.

George H. Rice, a retired brick manufacturer and widely known resident of Louisville, Ky., died at the residence of his son at Kill's station of pneumonia. He was 64 years of age and a native of Louisville. He retired a few years ago.

George M. Hall, one of the best known business men of Homestead, Pa., died at his home of paralysis. He was 45 years of age and entered the contracting business at the age of 23. At the time of his death he was the president of the Homestead Savings Bank & Trust Co., The George M. Hall Contracting Co. and Nonpareil Stone & Brick Co.; treasurer of the Imperial Gold Mining Co. and a member of the Homestead council.

UNIVERSITY OF ILLINOIS EXECUTIVE IS TO SERVE ANOTHER TERM.

Urbana, Ill., March 13.—Dr. E. J. James was re-elected president of the University of Illinois yesterday for a term of two years by the trustees at their annual meeting. The new board of trustees organized as follows:

President—L. H. Kerrick, Bloomington.

Secretary and register—W. L. Pillsbury.

Comptroller—S. W. Shattuck.

Treasurer—H. A. Haugan, Chicago.

Prof. A. V. Bleininger of Ohio State university was selected to fill the newly created chair of assistant professor of ceramics. S. A. Bullard of Springfield, the retiring president, quit the board after a service of eighteen years.

Bloomington, Ill., March 13.—L. H. Kerrick, one of the wealthiest farmers of central Illinois, an extensive breeder and exhibitor of Aberdeen-Angus cattle, was found dead in bed this morning. Heart disease was the cause. He was elected president of the board of trustees of the Illinois university in Champaign yesterday. Mr. Kerrick was 60 years old.

EDWARDSVILLE WILL SUPPLY BRICK TO ST. LOUIS.

An Edwardsville, Ill., concern has come into active competition with the big St. Louis plants on the larger deals, and with evident success. The Richards Brick Company has closed a deal with the James Stewart Company, contractors, for the new Ely-Walker & Company building in St. Louis. One million brick will be supplied for the structure from the Edwardsville works. The contract is one of the largest ever made in this city in the building brick line.

ACCIDENTS, DAMAGES AND LOSSES

The Gifford (Ia.) Tile Works has been sold at sheriff sale. It was bid in by Luther Devondorf for \$117,822.

The Scott Brick Co., Prudential Bldg., Atlanta, Ga., has been placed into the hands of a receiver and a petition for bankruptcy filed.

The Southern Fire Brick & Clay Co., Hillsdale, Ind., has had a suit decided in their favor for \$3,000 against John F. Warwick of Chicago.

Henry M. Baldridge, a brick and tile manufacturer at Mt. Auburn, Ills., has filed a petition in bankruptcy, scheduling his assets at \$400 and liabilities at \$6,620.

William Collier, an oiler at the Pioneer Fireproofing Construction Co.'s plant at Ottawa, Ills., had his clothing caught in the large shaft and all torn from his body except his shoes.

John Holmes, a brick mason, fell from the scaffold while at work on the Central Christian Church, Houston, Texas, and was killed. He left \$1,800 in a Houston bank and to date no relatives have been found.

Raymond C. Coblantz has sued the brick company at Mound Valley, Kansas, for \$12,100 damages for the loss of three fingers which were crushed by a machine while he was employed by the company.

The Schuylkill Valley Clay Mfg. Co., 1011 Chestnut St., Philadelphia, Pa., and having a plant at Schoemakersville, Berks Co., has been placed in the hands of a receiver by James B. Smith, a creditor and stockholder. The plant is valued at \$100,000.

Walter D. Meals has been appointed receiver for the Eggers Brick Co. of Cleveland, Ohio. The company is capitalized at \$150,000. The State Banking & Trust Co. having filed a suit for \$29,548.50 against F. H. Eggers and the Eggers Brick Co., caused Mr. Eggers to apply for the receiver.

The Savage Fire Clay Co. at their Keystone Junction, Pa., plant had two accidents in one day. Clayton Lenchart while working about the crushing machine caught his clothes in a revolving wheel and badly injured him before they were torn from the body. Also a laborer by the name of Long was caught in a cave-in of the clay pit and both arms badly crushed under the clay.

FILES PETITION FOR WRIT OF HABEAS CORPUS PROCEEDINGS.

Claiming that State Warden W. J. Garey, at the camps of the Bibb Brick Company, Macon, Ga., is illegally restraining him from attending a trial involving his civil rights as against the colored commandery of Odd Fellows of Macon, William Collins, a negro, filed a petition for writ of habeas corpus with Judge W. H. Felton, of the superior court, and asked that the court pass upon his rights in the matter. Collins sued the Odd Fellows for alleged injuries which he sustained when they initiated him into the order. He said they broke three ribs and otherwise badly damaged his physical condition. For stealing a mule some months ago Collins was sent to the pen for ten years. Prior to this he had entered suit for damages against the Odd Fellows.

WISCONSIN CLAY WORKERS' ASSOCIATION WILL MEET IN MILWAUKEE IN 1907.

The Wisconsin Clay Workers' association, which finished its annual meeting at Madison, March 1, decided to hold its next meeting in Milwaukee. It also decided to ask the railroad commission of Wisconsin to issue an order reducing freight rates on brick and tile so that Wisconsin manufacturers can compete in the southern part of the state with the Chicago manufacturers, who are declared to have an advantage over the Badgers because they are given more favorable freight rates. The matter was laid before the railroad commission several weeks ago, but was withdrawn at the request of the railroads, which promised to make satisfactory rates, but have so far failed to do so. A special committee was appointed to collect funds and prosecute the matter before the commission. This committee consists of Harry De Joannis of Chicago, F. L. Sanborn of Portage, and A. Kearney of Kenosha.

The following officers were elected for the ensuing year: President, A. W. Hilker, Racine; vice president, Fred Vogt, Milwaukee; secretary, Oscar Wilson, Menomonie; treasurer, Oscar Zimball, Sheboygan.

H. C. KAFER & CO. QUIT BRICK MAKING AFTER MANY YEARS OPERATING.

H. C. Kafer & Co., Trenton, N. J., brick manufacturers, have announced that with the expiration of the lease on their yard at Princeton and Paul Avenues, April 1, they will retire from the brick business. This company has been for many years one of the most important branches of the brick industry in Trenton. The retirement of Mr. Kafer and Mr. Ivins comes after business careers which have been exceptionally successful. They have no plans for the future in a business way but they will not be engaged in brick manufacturing.

This company is made up of Nathan R. Ivins and Henry C. Kafer. These men went into the brick business in their present yard nineteen years ago when the industry was so extensive in Trenton that the city was classed among the most important brick producing centers of the United States. Kafer & Ivins, in the bright days of brick making here, contributed very largely to the fame of the city in this particular commercial way.

The Kafer & Ivins yards turned out common and pressed front brick. The annual capacity of the yard was 1,500,000 front brick and 2,500,000 common brick, and it is estimated that in the nineteen years of the history of the company a total of 72,000,000 bricks were produced.

The market for the Kafer & Ivins front bricks has always been an extensive one and the demand has always been greater than the supply. Most of the business for front bricks was in New York markets. The common bricks were very largely sold in Trenton.

They furnished the front bricks for many of the prominent buildings in New York and other cities. Their front brick was of the highest grade. The last order they received was for the front bricks for the Singer Building, Corner Broadway and Liberty St., New York, which is to be forty-two stories high.

THE RELIANCE DRY PRESS CATALOGUE.

The latest catalogue of brick machinery to enter the office of the Clay Record is that of the Reliance Machine & Tool Works, St. Louis, Mo. They are the builders of the Reliance Dry Press brick machine and general appliances that goes to make a complete clay working plant.

The Reliance Machine, an advertisement of which you will see on page 14 of this issue is one of the newer makes of dry presses. It is meeting with all kinds of success and the company state that they are exceedingly busy with orders. The company has had years of experience in building brick presses, they being the builders of several of the St. Louis type of dry presses.

The Reliance Dry Press is a radical departure from the old style "toggle" machine. It is operated by rams and plungers and the main pressure is applied from the bottom in an absolutely straight line. This leaves the finished brick at the top of the mold box. Write and get further information.

BRINGS SUIT FOR HEAVY DAMAGES.

In filing an action for \$200,000 against the Pennsylvania Railroad Co., the Ohio Silica Co. of East Liverpool, O., through its attorney, ex-Judge P. M. Smith, of Pittsburgh, Pa., in a petition and bill of particulars, asserts that through a combination of circumstances the silica company, which was formerly operated under the name of the Juniata Silica Co., at Newton Hamilton in Mifflin county, Pa., was put out of business.

It is asserted that the company at Newton Hamilton, was able to make direct shipments, of flint to manufacturing potters and that it was a competitor of the Potters Mining and Milling Co., of East Liverpool, a firm which had to make two shipments of raw materials before their product reached the manufacturers. It is asserted that while the company was operating at Newton Hamilton, freight rates jumped to \$2.20 a ton for its product and after the firm removed to East Liverpool rates were immediately lowered to \$1.40 a ton.

The Potters Mining and Milling Co., of East Liverpool, were competitors of the new firm. The potters company is owned by a large number of manufacturing potters of the East Liverpool district and its officers are: President, B. C. Simms, of the Thompson Pottery Co.; secretary, Joseph G. Lee, of the Knowles, Taylor & Knowles Co.; general manager, Allen Fink, formerly of Mt. Vernon, O. The officers of the Ohio Silica Co. are: President, George W. Ashbaugh; vice president, B. F. Parker; treasurer, Charles C. Ashbaugh; secretary, William G. Stevenson.

The Ohio Silica Co., it is alleged, was unable to get cars, coal and other favors from the Pennsylvania Company, so long as it was located at Newton Hamilton, under the name of the Juniata Silica Co.

PUT THEIR EMPLOYEES ON PIECE PLAN.

It is noted that the Townsend Brick and Contracting company, Zanesville, O., has placed its employes on the piece plan whereby the latter are enabled to make more dollars per week. This is undoubtedly beneficial to the wage recipients.

THE NEW YORK BRICK MARKET

The market for brick is quiet and there is little business being done. The holding up of the big building business that, with the filing of permits, which is expected to begin shortly, a good demand will set in. The stocks in New York city are of good proportions, although not large enough to cause any reduction in prices.

(Dealers' prices to consumers.)

Cargo lots, delivered, cars N. Y.

Front, buffs, No. 1.....	32 00	@	..
Grays, shaded and speckled.....	32 00	@	..
White, No. 1.....	32 00	@	..
Hudson River, common.....	5 50	@ 6 00	
Light, hard	4 50	@ 5 00	
Pale	3 50	@ 4 00	
No. 1 fire, American.....	25 00	@	..
No. 2 fire, American.....	20 00	@	..
Scotch	35 00	@	..

RECENT SALES MADE BY THE "MARTIN" COMPANY

The Standard Brick Company, Mountain View, New Jersey, are adding to their present brick yard equipment, one of the new "Martin" Compound Disintegrators, installed by the Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pennsylvania.

The Williamsburg Brick Works, Williamsburg, Virginia, are equipping their new plant with "Martin" Soft Mud Brick Machinery complete, and the "Martin" Patent system of handling and drying soft mud brick, supplied by the Henry Martin Brick Machine Company, of Lancaster, Pennsylvania.

The Holmes Brick Works, Holmes, Pennsylvania, are greatly improving their plant by the addition of the "Martin" Patent Rack Pipe Steam Brick Dryer System, installed by the Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pennsylvania.

Mr. P. Lafond of Sand Point, Idaho, has just installed a "Martin" all iron and steel Style "P" Steam Power Brick Machine complete, including sander, etc., purchased from the Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pennsylvania.

The C. M. Miller Manufacturing and Mining Company, Terre Haute, Indiana, have just equipped their plant with one of the "Martin" Latest Improved Style "A" Steam Power Brick Machines, together with Martin Sander and Brickyard Supplies, furnished by the Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pennsylvania.

The Middleton Clay Working Company, Middleton, Nova Scotia, are installing at the present time a Martin Disintegrator complete, supplied by the Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pennsylvania.

The Columbia Clay Company, Vancouver, British Columbia, are installing a new "Martin" Patent Compound Disintegrator complete, supplied by the Henry Martin Brick Machine Manufacturing Company of Lancaster, Pennsylvania.

FATHER OF SHALE BRICK CRITICALLY ILL.

Joseph Stafford, one of the oldest and best known citizens of Springfield, Ill., and the originator of the shale brick for paving purposes, is critically ill at St. John's hospital. He was removed to the hospital about three weeks ago from the Normandie hotel, where he has made his home for the last few years.

BRICK, TILE AND TERRA COTTA WORKERS MAKE AN AGREEMENT WITH STEAM ENGINES

The Brick, Tile and Terra Cotta Workers' International Alliance has entered into an agreement with the International Steam Engineers' Union whereby the Steam Engineers' Union is given jurisdiction over all engineers working in the brick, tile and terra cotta plants where a local union of that organization exists, and in localities where there is no steam engineers' union the brick, tile and terra cotta workers are to have jurisdiction over the engineers.

BRICK FAMINE NOW CONFRONTS THE BUILDERS OF SAN FRANCISCO

Mortar, mortar everywhere

And not a decent brick.

If the ancient mariner were to have changed places with a contractor in San Francisco he would have come to the conclusion that even a skyscraper might become under certain circumstances nearly as idle as a painted ship upon a painted ocean.

A brick famine is on, notwithstanding that ten months ago the wise ones were saying that it would require ten years to remove the debris from the burned district. Nearly all of the surface indications of the great fire have been eliminated, and while at every hand are lots deep in brick, the tempting high wall is gone, and the man who waxed financially fat on the brick-cleaning machines' output is looking around for owners who have bricks that are easy to handle and deliver from the scraper at \$9 per thousand.

New brick have gone up to \$13.50 in many cases, and the brick companies declare that their three big yards are unable to turn out the brick fast enough to fill the demand.

The contractors say that rather peculiar state of affairs exists in the brick market. Many men are anxious to buy brick from property-owners who have uncleaned lots in the burned district, but the owners for some unknown reason are slow to make terms. Contractors pay about \$3 per thousand for "debris" brick, clean them, stack them up and sell them to builders. All the owner has to do is to count the stacks and draw down his money, but the average owner apparently believes that he would better keep his brick and use them himself when he starts to build. In the meantime the brick companies announce that it is up to their capacity of production and brick will probably pass as common tender before long. The man without the price can truthfully sing:

In those damndest finest ruins

I would rather be a brick.

Reinforced concrete may be the undoing of the trust, but the brick is a brick for a' that.

SAND OR LIME BRICK OR BLOCK NEWS

The Waterloo (Ia.) Cement Tile Co. are now turning out all sizes of cement drain tile.

The Waterloo (Ia.) Granite Brick Co. has just sold 100 car loads of sand lime brick to be used in the beet sugar factory at Waverly.

The Brick & Stone works of the Lawton (Okla.) Concrete Manufacturing Co. has been purchased by J. C. Klein, W. F. Rice and C. S. Hough, all of Van Wert, Okla.

E. E. Smith, Rockville City, Ia., will go into the cement tile business, he having purchased a machine and a power mixer. He has several contracts for drain tile, using large size tile.

The plant of the Memphis (Tenn.) Granite Brick Co. has been sold by Bolton Smith and associates, the new owners buying same merely for the real estate, and will dispose of the machinery.

The Laketon (Ind.) Sand Lime Brick Co. have started up again after being closed down to make repairs and improvements. They have many large orders ahead for their well known sand lime brick.

The United States Brick Corporation, Michigan City, Ind., will more than double the capacity of their plant. A new five mould press, additional mixers and another steel hardening cylinder 66 feet in length has been added.

The Granite Brick Corporation, Norfolk, Va., has been incorporated with \$150,000 capital stock. Officers are: E. S. Mahoney, of Norfolk, president; L. F. Kwialowski of New York, vice president; Edward Mahoney, treasurer.

A factory for the manufacture of sand lime brick will be erected by the Columbia Brick company at Washington, D. C., at Berwyn, Md. It has purchased 80 acres of land for that purpose and the cost of the plant is estimated at \$80,000.

The Logansport (Ind.) Industrial Association are behind the Logansport Pressed Brick Company, which is planning to capitalize at \$30,000 and build a sand lime brick plant. Already \$10,000 worth of the stock has been subscribed. Rufus Magee and Judge Nelson are among the subscribers.

An application has been filed by the Scientific Brick Co. of Toronto, Ontario, for the winding up of the affairs of the Modern Brick & Stone Co. of that city. The Scientific company prepared \$12,000 worth of machinery under contract for the company and it failed to acquire a site for same to be placed.

The New England Roman Stone Co., Rutland, Vt., has been organized under the laws of New York with \$10,000 capital stock. The officers are Arthur H. Smith, president; Ransom H. Gillet, vice president; Wm. C. Colburn, secretary and treasurer, and E. Allen Burdette manager. The office is in the Gryphon block.

A party of Pittsburg capitalists are said to have secured a site just across from the furnaces of the Columbus (O.) Iron & Steel Co.'s plant and will manufacture brick out of the waste slag from this plant. Heretofore this slag has been considered a waste except with the Chicago mills of the U. S. Steel corporation, which is now converting it into Portland cement at the rate of 10,000 barrels daily.

MISCELLANEOUS ITEMS

W. E. Roberts, Idaho Falls, Idaho, has sold his brick yard to Albert Okerman.

J. R. Sutton has been elected general manager of the Table Rock (Nebr.) Brick & Clay Co.

H. O'Brien and son, C. G. O'Brien, have disposed of their stock in the Athens (O.) Brick Co. to W. N. Alderman.

William Freiberg, a Portland, Oregon, contractor, has bought 40 acres of clay land on Canyon Road for \$20,000 and will put up a large brick works.

The Riverside Fuel & Supply Co., Fremont, Ohio, are installing a new brick machine that will increase the capacity of their plant to 50,000 brick daily.

P. H. Paulsen has purchased A. E. Biglow's interest in the Estherville (Ia.) Brick & Tile Works, and arrangements are being made to enlarge the plant.

The Sioux City (Ia.) Brick & Tile Works announce that it will make a \$40,000 improvement to its Riverside plant, increasing the capacity 50,000 brick daily.

P. T. Harbour and Ed Towery have purchased from C. E. Nelson a one-half interest in his Weston (Oregon) Brick Works. They will enlarge the plant.

W. A. Burks, of Bentonville, Ark., has been looking over the brick shales and clays at Vineta, I. T., and only the small details remain to the closing of a deal for a plant there.

The Davenport (Ia.) Brick & Tile Co. re-elected the officers for another year and will increase the capacity of their plant at Buffalo by putting a 200 H. P. engine, open air drying sheds and new tracks throughout the plant.

The Dunning Brick Co., Aulander, N. C., has been incorporated with \$30,000 capital stock by J. A. Dunning, manager; W. S. Dunning, secretary and treasurer, and B. G. Williams, president. The company has taken over the Dunning plant, and will triple its capacity.

The Lengsholz & Diedling Tile Co., Malden, N. Y., to manufacture roofing, tile, etc., has been incorporated with \$9,000 capital stock. Incorporators are Joseph Lengsholz, of Malden, N. Y., R. F. Diedling and Leonard B. Howard of Saugerties, and Wm. D. Brinnier.

A. Fries & Sons, Connersville, Ind., have closed a contract with an Ohio concern for the construction of fire proof building and the installation of a new system of drying and handling the brick and tile. The new plant will average 25,000 brick daily the year round.

The National Brick & Tile Co., Albany, Ga., has been incorporated and will begin building a plant in April. The incorporators are S. W. Smith, S. J. Jones, W. N. Tichnor, W. E. Smith, R. M. Thompson, S. E. Bush, W. B. McKeller, F. L. Nelson and T. M. Nelson, all of Albany, and J. F. Gibson and J. S. Kennedy, of New York.

The Blackwell (Okla.) Brick & Tile Co. have completed their organization, and the following are officers: Z. A. Harris, president; M. J. Gottschalk, vice-president; C. P. Austin, secretary; W. H. Vickery, treasurer, and C. C. Frampton, superintendent. The capital stock is \$50,000. Machinery has been purchased and site selected on the Santa Fe Ry.

David Ausloos of Lena, Wis., is busy making arrangements for a brick works at Stiles Junction.

The directors of the Alpena, Mich., Portland Cement Co., have decided to rebuild the burned plant much larger than before. The loss was about \$200,000.

E. W. Redman has sold a one-half interest in his brick and tile business at Ithaca, Mich., to J. O. Thomas and the firm name will be Redman & Thomas.

Alexander Kerr of Spokane, Wash., is planning to organize a company for the manufacture of pressed brick and fire clay near Northport. The plant will be on the S. F. & N. Ry.

The Alliance (O.) Clay Products Co., have sold additional stock in their company and will build more kilns and enlarge the plant. The company is a new one and doing a fine business.

A bill has been introduced in the House of Representatives at Lansing, Mich., empowering the city of Detroit to build a brickmaking plant and engage in the manufacture of brick.

There is a movement on foot to enlarge the G. W. Ault Tile plant at Calidonia, Ohio, so as to make brick and tile. New machinery will be installed and buildings built to manufacture the whole year through.

The Briton (Mich.) Pressed Brick Co. will enlarge their plant, John J. Duffy is president, David Allmendinger, vice-president; Frank Crowell, secretary; and Dan Zimmerman, treasurer, all of Ann Arbor, where the main office is located.

The Columbia Clay Works of St. Louis, Mo., has increased its capital stock from \$71,000 to \$100,000.

The Purington Paving Brick Co., Galesburg, Ills., has announced a wage increase of 10 per cent to their 500 employees.

The Ohio Clay Products has sold its Salineville, O., works to Miller & Couler of Pittsburg, Pa., who will operate same.

The Star Brick Co., Central City, Ky., has been incorporated with \$4,000 capital stock. The incorporators are D. A. Woodburn, J. T. Woodburn and S. J. Gish.

The Coast Brick Co., Oakland, Cali., has filed articles of incorporation with a \$50,000 capital stock. Directors are J. C. Brannock, Dennis Dimond and Otis W. Engs.

The Akron (O.) Vitrified Clay Mfg. Co. has been incorporated with \$40,000 capital stock by Alfred Akers, Chas. B. Akers, W. T. Akers, G. S. Akers and F. M. Harpham.

James Maine & Son, Des Moines, Ia., have secured a new factory for that city that will manufacture floor tile and ornamental Terra Cotta. Fifty men will be employed and the factory started at once.

The Eureka Coal & Brick Co., Estevan Assiniboia, Can., has secured the services of William Baillie as manager of its brick plant. He was formerly at Laprairie, Quebec, and is a high grade brick manufacturer.

The Oklahoma Supply & Construction Co., of Lawton, Okla., which was recently organized to manufacture brick, crushed stone, burn lime, and do a general construction business will start work shortly. Samuel Joise of Macon, Ga., is interested.

Buffalo Waste Heat Dryer.



"Buffalo" Waste Heat Fan Direct Connected Engine
Bottom Horizontal Discharge.

The first **WASTE HEAT DRYER** bore the name "BUFFALO." Economy is the watchword and in the third of a century since we began solving drying problems, there has been steady engineering progress.

"**BUFFALO**" **WASTE HEAT FANS** take the **WASTE HEAT** from the kilns and deliver it to the drying chambers, which can be automatically kept at any temperature and humidity. "BUFFALO" FANS have water cooled bearings when necessary.

APPLICABLE TO BRICK, TILE AND TERRA COTTA PLANTS.

Our thirty years of success is due to a constant study of clays.

Write, stating requirements, and ask for catalog.

BUFFALO FORGE COMPANY, BUFFALO, N. Y., U. S. A.

CANADIAN BUFFALO FORGE COMPANY, MONTREAL, CANADA.

The Standard Reduction Co., of Chicago, have begun the construction of a plant near Mobile, Ala., to develop a deposit of Fuller's Earth.

The Sunset Brick & Tile Co., Gonzales, Texas, have a force of men at work erecting a drying shed 47x120 feet. Two kilns are also being covered.

The Staples Brick Co., Kingston, N. Y., has been incorporated with \$60,000 capital stock. Directors are Mary R. Staples, S. S. Staples and A. S. Staples, of Kingston.

The Chanute (Kan.) Cement & Clay Products Co., have started on their plant, also the Chanute Brick & Tile Co. J. W. Pratt is the engineer in charge of the cement plant.

The Waycross (Ga.) Hydraulic Brick Co., with \$50,000 capital stock paid in is applying for a charter. The incorporators are J. S. Bailey, J. G. Blain and W. T. Campen.

Victor Cushwa & Son have purchased a new and enlarged brick machine for their plant at Williamsport, Md., and are installing same so as to take care of their enlarged trade.

Peterson-Kartschoke Brick Co., 3rd and Keyes St., San Jose, Cal., is trebling the capacity of its plant, at a cost of \$100,000; a new dryer and a continuous kiln will be added and a 110 horse-power engine and boiler will be added.

The plant of the South Zanesville, (O.) Brick & Sewer Pipe Co., is rapidly being completed, says J. C. Bolen, the president and manager. He expects to start work in about thirty days. Nearly 200 men will be employed in operating the new fire-proof plant.

M. M. Ross has sold his interest in the Antigo, (Wis.) Clay Co., to William Stone, his partner, who will continue the business.

The Ornamental Tile Co., Chicago, has been incorporated with \$10,000 capital stock by Forest G. Smith, John F. Hans and L. V. Rickey.

The Tramway (Wis.) Brick Co., has been incorporated with \$24,000 capital stock. Incorporators: P. N. Swenson, W. A. Drowley and H. F. Spink.

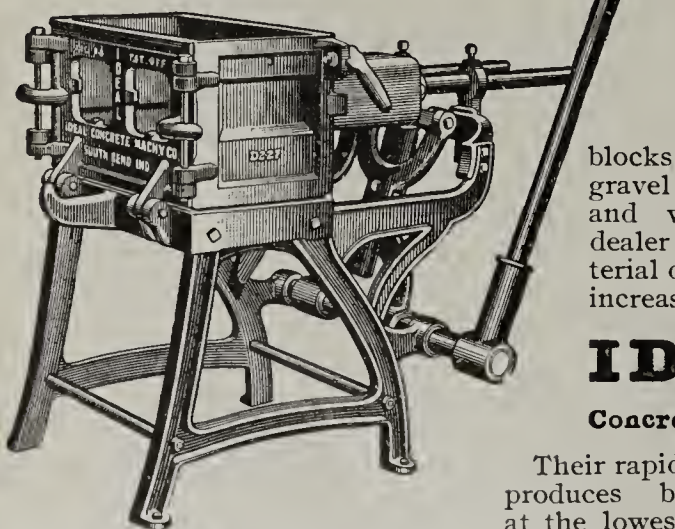
The John Kline Brick Co., Wickliffe, Ohio, has been incorporated with \$80,000 capital stock by John Kline, D. H. Tilden, A. A. McCashin, H. M. Roberts and E. G. Derr.

The Birmingham (Ala.) Co-operative Hollow Tile Co., has filed articles of incorporation with \$6,000 capital. Incorporators are, E. R. Reityer, J. R. Pryne and Grif-fin Lampin.

M. E. Mitchell, owner of the Lake City, (Ia.) Brick & Tile Factory has been inspecting the clay along the Racoon river and found at Grant City clay of excellent quality. If satisfactory arrangements can be made in securing the land they will erect a factory there.

The plant of the Adrian (Mich.) Brick & Tile Machine Co., has been sold to the Ideal Wire Fence Co., who will operate same for making wire fences, also will continue in the brick and tile machinery business. E. B. Lee, of Weston, is president, J. V. B. Palmer, vice-president, E. A. Baker, secretary-treasurer and Geo. H. Cock, manager. They are capitalized at \$100,000.

A NEW WAY TO SELL CEMENT



Ideal Concrete Blocks are adapted to any building purpose. Will undersell and outsell all other materials.

Adaptable as to size of block and countless designs of face and natural stone effect.

Wonderfully simple. No chains, springs or gears.

Catalogue and fortune making facts on application.

There is sale for cement in the form of Cement Building Blocks as well as in barrels and bags.

The Ideal Concrete Machine makes building blocks from sand, gravel and cement, and will help any dealer in building material double sales and increase profits.

IDEAL

Concrete Machines

Their rapidity of operation produces building blocks at the lowest possible cost. Embodiment the only principle (face down) permitting the practical use of rich facing material with less expensive material in back of blocks.

Ideal Concrete Mc'h'y Co.

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South Bend - - - Ind.

"Mussens Limited, Montreal,
Sole Agents for Canada"

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DRYERS

FOR

BANK SAND GLASS SAND ROCK, CLAY COAL, ETC.

All Mineral, Animal and Vegetable Matter.

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue W. C.

American Process Co.,

62-64 William St.

NEW YORK CITY

Negotiations are on for the Star Encaustic Tile Co., of Pittsburg, Pa., to move their plant to Jeanette.

The New Jersey Clay Co., Elizabeth, N. J., has been incorporated with \$100,000 capital stock by Louis P. Horning, William Miller and Patrick H. McGann.

The Amsterdam (Mo.) Coal Co., has made arrangements for a company to locate at its mine and utilize a six-foot vein of clay which underlays the vein of coal.

Messrs. Jolks & McLeod, of Quitman, Ga., have found clay on their property which they have had tested and produced beautiful samples. They will try to organize a company.

The McCook (Nebr.) Pressed Brick Co. has been organized with \$15,000 capital stock. Have secured a site and ordered machinery and expect to be turning out brick in forty days.

The Fitchburg (Mass.) Brick Co., has been incorporated with \$30,000. The officers are Frank H. Foss, president; Fred C. Nichols, treasurer, and Robert Mercy, secretary, all of Fitchburg.

The Provo (Utah) Pressed Brick Co., will go into the manufacture of tile and have bought machinery and secured Fred Green, an experienced tile man from Illinois, to superintend that department.

The Sayre-Ford Mfg. Co. has been incorporated under Delaware laws, with \$100,000 capital stock to manufacture brick and building material. Incorporators are John W. Ford, Isaac D. Sayre and William P. Abdill.

Isadore Putzinger, of Solvay, is about to erect a brick manufacturing plant at Kirkville, N. Y.

John Agnew has been appointed manager of the Bromilay Brick Co., Alexandria, Va., vice H. C. Yohe, resigned.

The Graettinger (Ia.) Tile Works stockholders decided to enlarge their plant and to put in additional machinery and power.

C. E. Poston and others will build a \$100,000 brick making plant at Attica, Ind. The company will be called the Attica Paving Brick Co.

A. T. McAfee, Nokomis, Ill., is pushing the work on his new tile and brick works so that he can put same in operation soon as the weather will permit.

The Sumpter Brick Works at Sumpter, S. C., are putting in a new Thew steam shovel so as to handle their clay from the pit in a much cheaper and better way.

The Hancock Brick & Tile Co., of Findlay, Ohio, has purchased a Thew Automatic Shovel from the manufacturer at Lorain, Ohio, so as to keep up with the demand for their ware.

H. R. Robertson, on March 1, assumed the management of the Crookston (Minn.) Brick & Tile Co., vice O. K. Berget, resigned. S. W. Vance, the owner of the company, has decided to retire from active business life.

Gottfried Metzger, formerly superintendent of the Richards Brick Co., at Edwardsville, Ills., has secured options on a tract of land northeast of the city and already has stock subscribed to the amount of \$10,000 for a new brick making plant.

The Burning Question is Solved

THROUGH THE

CHMELEWSKI PATENT KILN

A clever combination of the common updraft and the modern continuous down draft Kiln.

The limit of simplicity and effectiveness.

Gives thoroughly well burned, clean colored bricks without any cracks.

Saves about 60 to 70 per cent fuel and can be burned with almost any kind.

Daily capacity up to 100,000 bricks. For descriptive pamphlet write to

Dr. HERMAN RABERGH

Sole Agent in the U. S. A. and Canada

24 Cottage Ave.

Fitchburg, Mass.

CLAY RECORD.

FOR SALE

One 40 h.p. gasoline engine, one semi-automatic side cut brick cutter, Wallace Mfg. Co. make. One disintegrator and dump table made by Horton Mfg. Co.; 75 good brick moulds, also trucks and wheelbarrows. All in good condition. Address
W. H. VANDER HAYDEN,
Ionia, Mich.

BRICK AND TILE MACHINERY AT SACRIFICE

Where a country is tiled, factories are offered complete, or in part, Cheap. Have several Brewer Mills for sale, and others.

Engines, Boilers, Crushers, Drying Pipes, etc. If you wish to buy or sell write.
Brick and Tile Machinery
Secor, Ill.

FOR SALE.

An up-to-date brick plant. Capacity 35,000 brick Cheap fail and labor. Fine shipping facilities and an abundance of pure loose clay. Local demand takes almost entire output at good price. Will bear close investigation. Good reason for selling.
Address, WM. M. READ,
Princeton, Ind.

MACHINERY FOR SALE

One No. 2 Giant brick and tile, machine with dies for tile from 3 to 8 inches and side cut brick die. One Bunsing automatic tile cutter. One Bunsing automatic block and end cut brick cutter.

\$100 worth of repairs would put them all in first-class condition. Will sell cheap. Reason for selling, am using larger capacity. 1801 1/2 Second Ave.
Rock Island, Illinois

BRICK YARD FOR SALE.

Brick Yard for sale cheap. A bargain to the right party. Good market at hand. For further information address

BRICKMAKER,
Care Clay Record, Chicago, Ill.

FOR SALE AT A BARGAIN.

One Sampson Steel Company's Sand-lime Brick Press in good condition, used but a short time.
Address W. P. BRUBAKER,
Jacksonville, Fla

FOR SALE

One Chambers pug mill, practically new, sufficiently large for any output. A first class machine in every respect. Address
ALONZO CURTIS BRICK CO.,
Grant's Park, Ills.

MACHINERY FOR SALE

The following machinery not used by us but all in good condition, will be sold at very reasonable prices.

One Penfield Single Mould Power Re-Press, capacity 10,000 a day.

Two Fate Company Bensing Automatic Side cutting tables. American Enamelled Brick & Tile Co.
1 Madison Ave., New York.

FOR SALE

20,000 Wooden Pillets, 32 inches by 10 inches, 5/8 inch lumber, legs 3 1/4 inches high, 1 1/4 inches thick. A bargain if taken at once. Address

JASPER ADAMS
Battle Creek, Mich.

FOR SALE

One Second-hand Four Mould Dry Press, in good order. One of the best presses on the market. Answer quick if you want it.

Address G. care Clay Record
Chicago, Ill.

FOR SALE

Two complete sets brick making machinery; including Chambers brick machines, elevators, clay rolls, granulators, hoists etc.

ILLINOIS BRICK CO.,
Chicago, Ill.

SITUATION, INVESTMENT OR LEASE.

Wanted, situation as manager or assistant of either Dry-Press or stiff-mud brick plant, by one who is thoroughly practical in all details pertaining to both the manufacturing and sales end of the business. Could also invest some capital, or would consider leasing a small up-to-date plant.

Address Ohio, care CLAY RECORD, Chicago.

ENGINES AND BOILERS

Corlis engines, 20x48, 18x36, 16x42, 12x36. Also 40 other sizes and styles in stock.

Boilers, Tubular, 84x18, 78x16, 72x18. Also 60 other styles and sizes in stock.

Send specifications of your requirements and we will make you a proposition that will interest you.

THE RANDLE MACHINERY CO.
1732 Powers St., Cincinnati, Ohio.

MANAGER WANTED

An experienced brick maker as superintendent and manager of a new brick plant, located on the Hudson River. River and rail shipments to New York. We are equipped with three machines, plenty of power, entire new equipment. Clay and sand within 600 feet of the machines, conveyed over trussel on cars to machines. Large sand bank from which abundance of sand can be shipped. Will require an investment from party wishing this position. Will give to right person absolute charge of plant. Address

C. R. SHEFFER, Pres.
Mechanicsville, N. Y.

FOR SALE.



Right and left-hand One, Two and Three Way Switches, of various gauges, radius and weight rail, at special prices.

THE ATLAS CAR & MFG. CO.,
Cleveland, Ohio.

FOR SALE—CHEAP—New and re-laying rails, 12, 16, 20 and 25 pound. For prices, address
ATLAS CAR & MFG. CO.,
Cleveland, Ohio.

FIRE CLAY FOR SALE

On one hundred and sixty acres, N. Y. C. & P. R., at Salt Lick Siding, near Karthaus, Pa. Expert after careful examination reports 350,000 to 400,000 tons.

We have our own railroad on our property and are mining the coal. We desire to sell clay either at lump sum, in royalty, or delivered on cars.

The clay has been thoroughly tested and the deposit are opened on the property in such places for examinations.

Chas. H. Thompson.

18th and Indiana Avenue,
Philadelphia, Pa.

FOR SALE OR EXCHANGE

45 ton, 1 1/2 yard Vulcan Steam Shovel in first class condition. Price \$3500.

One No. 2 Giant Brick Machine, made by the American Clay Machinery Co.

One large sized Granulator.

One set of Large Sized Rolls.

Fifty double deck Brick Cars.

Large quantity of rails and steam pipe.

STEGER BRICK CO.
Suite 306. 145 La Salle St., Chicago, Ill.

POSITION WANTED

Young man wants position as manager or superintendent stiff mud brick yard. Small face brick yard preferred. Best references. Address

Pittsburg, care Clay Record
Chicago, Ill.

FOR SALE

We offer for sale at a sacrifice the following BOYD Presses:

One 3 Mold Standard 1891 Pattern

Two 4 Mold Standard 1897 Pattern

All in good condition. Inspection invited. Immediate shipment.

Harrison-Walker Refractories Co.,

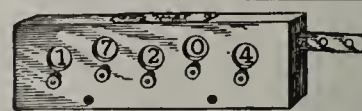
Farmers Bank Building,

Pittsburgh, Pa.

FOR SALE CHEAP.

One Monarch Brick Machine No. 166, capacity 35,000. One Brewer Clay Crusher, one Sander and Dump Table, four Brick Barrows, three Brick Trucks. About 16,000 Lath Pallets. Shafting and Pulleys. All the above are in good condition. Will sell all or part to suit purchasers. Address,

PFEFFER & SON,
Gettysburg, Pa.



No better made, cut from \$3 and \$10, to

4 Wheel, \$3.00

5 Wheel, \$3.25

Guaranteed.

Sold by all dealers.

Paper Joggers quoted. R. A. HART, 41 White St., BATTLE CREEK, MICH

FOR SALE OR TRADE.

Two Brick and Tile Plants in Iowa and Illinois, now running. Address,

THE KILN DOCTOR,
514 Fourth Street, Dayton, Ohio.

BRICK PLANT TO LEASE

Will lease my brick plant at Sutton to good party for one-third profit or one-fifth of the out-put. Plenty of good clay. Good market.

S. HUNZIKER,
Sutton, Neb.

A FORTUNE FOR A BRICKMAKER

Brick Manufacturing Plant to Lease

From the estate of the former owner who died recently, I have acquired a complete brick-yard plant equipped with sheds, grinding pits, kilns, etc., and including nearly 30 acres of practically unlimited deposits of pressed-brick clay. 1 1/4 miles from center of city. Labor cheap and plentiful. ALONGSIDE READING RAILROAD. 30 miles to Philadelphia, 60 miles to New York. Capacity of yard run by horse-power 3 millions. By equipping plant with some machinery could produce 10 to 12 millions. Common brick sold in Trenton last year for from \$8.50 to \$12.50; pressed brick, \$16.00 to \$20.00. Market unlimited.

If you can command capital to run the business, this is the chance of a lifetime. Will lease on rent-and-royalty basis. Triflers need not apply. Telephone, telegraph or write me at once, giving references or reasonable evidence of your ability to command capital, and state probable quantity of bricks you would expect to make.

ALBERT BRANDT,
Trenton, New Jersey.

POSITION WANTED

Position by experienced and practical brickmaker as superintendent of a stiff-mud or dry-press brick plant. Experienced in burning brick and care of kilns and machinery. Address,

W. S. Care of Clay Record,
Chicago, Illinois.

PARTNER WANTED

A good, reliable man of experience, with some capital to invest in and take charge of a new Dry Press Brick Plant. Plenty of shale, and good market for all the brick. Address

DENIS, care Clay Record,
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YARD TO LEASE

To Lease, partly dismantled brick yard on dock in Mich. Lake Shore town; government harbor and P. M. Ry. Chambers machine, 50,000 capacity. Abundance of clay adjoining plant. Makes white face brick. Cheap labor and fuel. Address

C. M. 345 Ohio St., Chicago.



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Big Money Made by Manufacturing Them

NO IDLE
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PETTYJOHN PORTABLE
BLOCK MACHINE

Is the Best, Fastest & Simplest

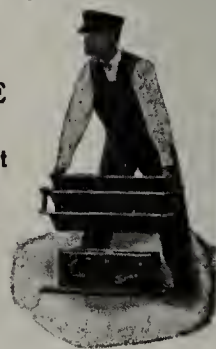
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Latest Improved Wonder of the Age

I now propose to give
all a chance
to try

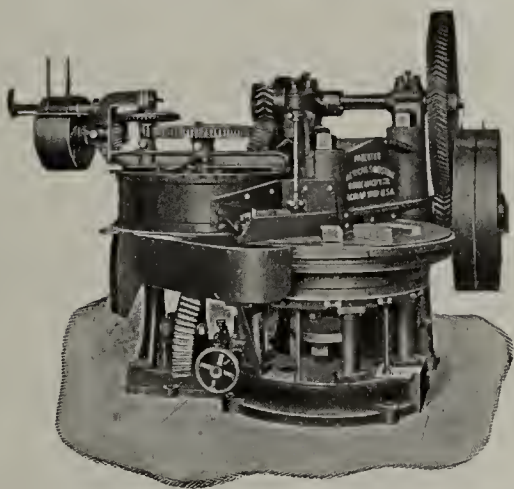
The Swift System

by remodeling one
kiln or building one
new one for \$100.00.
Write for particulars to

E. F. SWIFT
514 West Fourth St.
Dayton, Ohio.

The American Sandstone Brick Machinery Co.

INCORPORATED APRIL, 1902
SAGINAW, MICH.

**Improved Komnick Rotary Presses**

Are now being built with extra table for making fancy brick, on which double pressure is exerted.

Don't confuse our Practical System with the so-called Scientific Systems. We have the **Practical System**, the **Practical Machinery**, the **Practical Press**, the **Practical Hydration** and the **Practical Outfit**, which is **Manufactured in our own Shops**, under the supervision of **Practical Men** with **Practical Experience**.

Our plants are **installed under the supervision of Practical Engineers** who know how **Sand-Lime Brick** should be and can be made. We have **Practical Plants Running Successfully** to show to prospective investors.

WE ARE NOT SCIENTISTS

We **Produce Results**, because we are the **Oldest Practical Sand-Lime Engineering Company** Doing Business in the United States, and we **defy contradiction**.

THE CLAY WORKER'S HAND-BOOK

A Manual for all Engaged in the
Manufacture of Articles from Clay

JUST OUT : : PRICE \$2.00

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PRODUCER-GAS and GAS-PRODUCERS

BY AN ACKNOWLEDGED AUTHORITY.

A 300-page book containing thirty chapters, giving the fundamental principles and definitions, calculations, classifications, manufacture and use; the fuel, the requirements, the history, its by-products, **Producer-Gas** for firing kilns, steam boilers, and power plants. The future of the Gas-producer and a bibliography.

OVER 100 CHOICE ILLUSTRATIONS—PRICE, \$4.00.

A subscription to the **CLAY RECORD** for one year without additional charge to those that are not now subscribers.

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Branch Yard Banister River,
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BOSTON BRICK COMPANY

**Manufacturers of Plain and Fancy
Brick, Cement Brick and Blocks**

H. W. COSBY, Superintendent and General Manager.

South Boston, Va., January 19, 1907.

Marion Machine, Foundry and Supply Co.,
Marion, Ind.

Gentlemen:—

As regards the Rust Clay Feeder we bought of you last year, will say it has been in use in our branch yard at Houston, Va., since last July and is giving **PERFECT SATISFACTION**. It practically saves us two men besides doing the work **BETTER** and with **REGULARITY**.

The greatest trouble brick men have is getting hands to feed regularly—they will over feed and choke the machine break or run belts off and then sit down and rest while the owner labors to repair and start up again. Your Clay Feeder is perfect and is indispensable to any brick manufacturer who wishes to make a good brick at lowest cost.

Yours truly,

Signed by H. W. COSBY, Supt. and Gen. Mgr.

BOSTON BRICK CO.

Marion Machine, Foundry and Supply Co.
Marion, Ind.

FOR SALE**A Fine Opportunity**

On or prior to January 1st., 1908, we shall discontinue the manufacture of Brick Machines and brick yard supplies. We offer for sale at any fair bid our business, good will, patterns, supplies and stock on hand. Our old reliable Machines are sold throughout the entire United States without expense to us and any one who engages in manufacturing can increase their sale largely by slight effort. These Machines have been made in this factory for thirty years.

The Tiffin Wagon Company, ~ ~ Tiffin, Ohio

TO SOFT MUD BRICK MAKERS

We have in the AMERICAN PRESSED STEEL PALLET the best pallet ever made. It has features possessed by no other pallet, and is the strongest and longest-lived.

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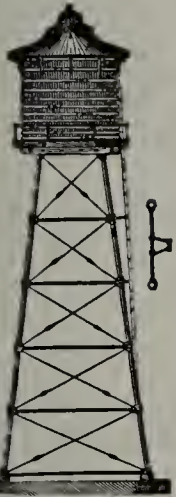
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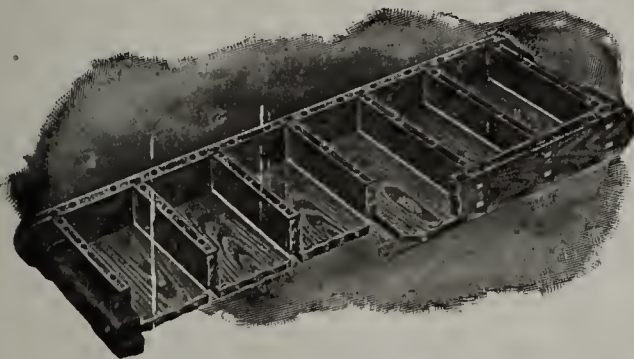
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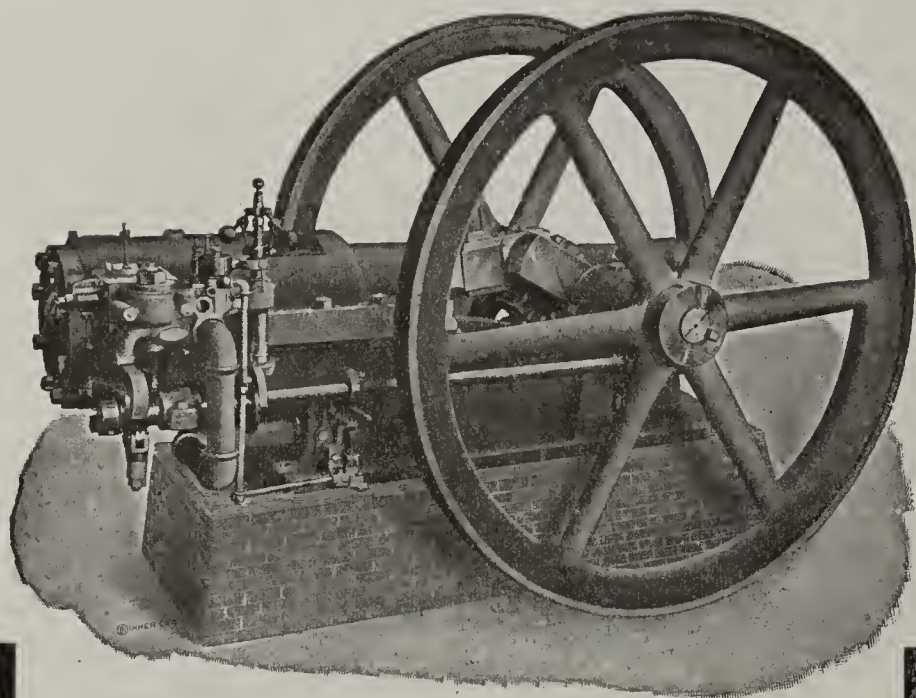
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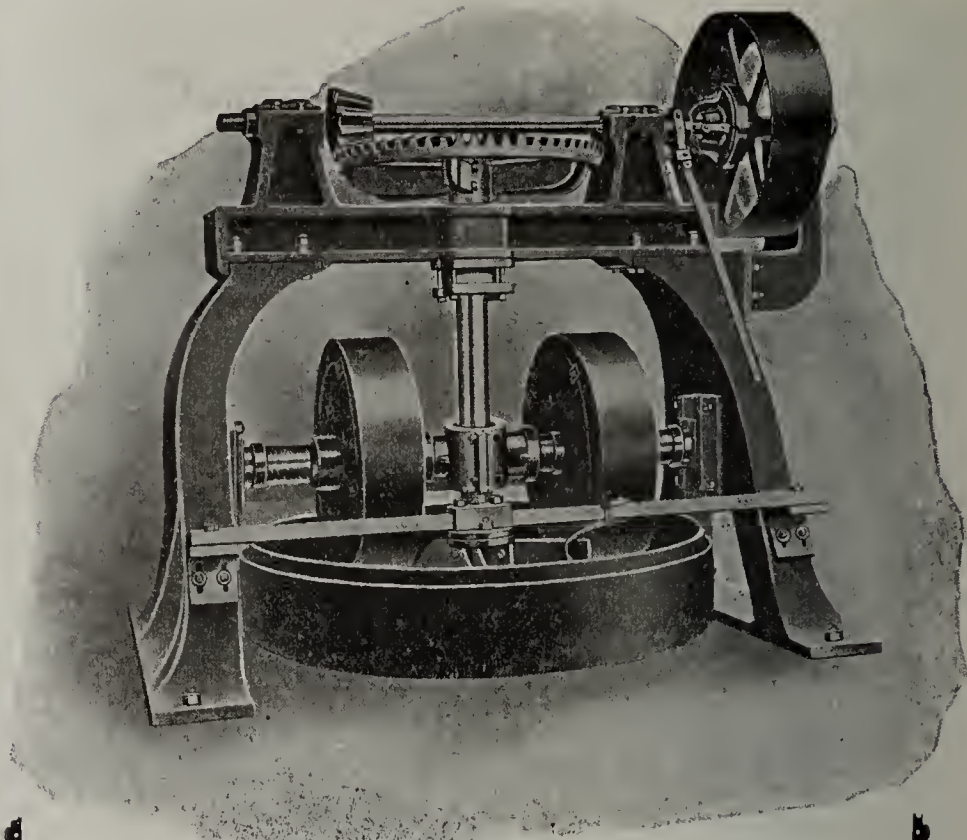


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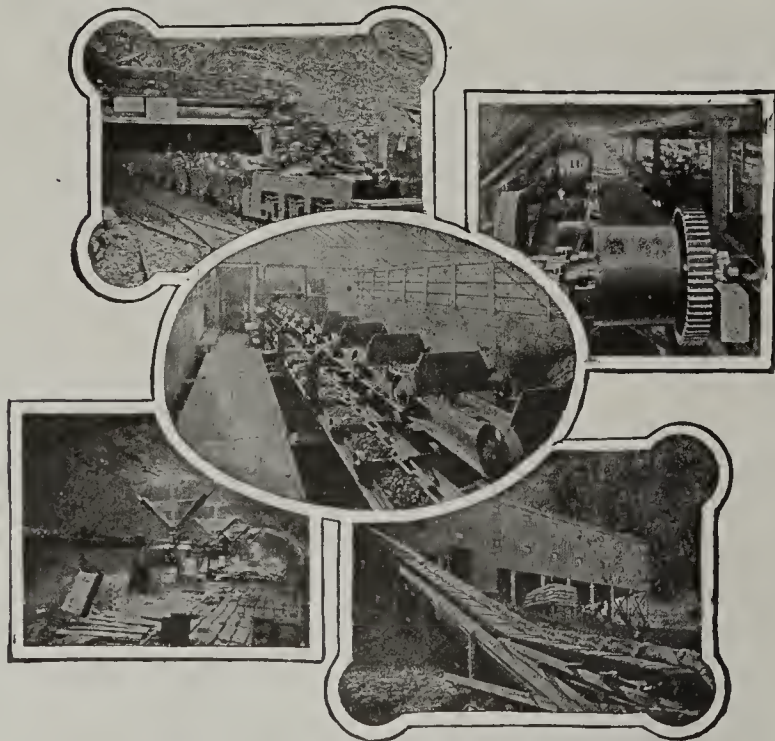
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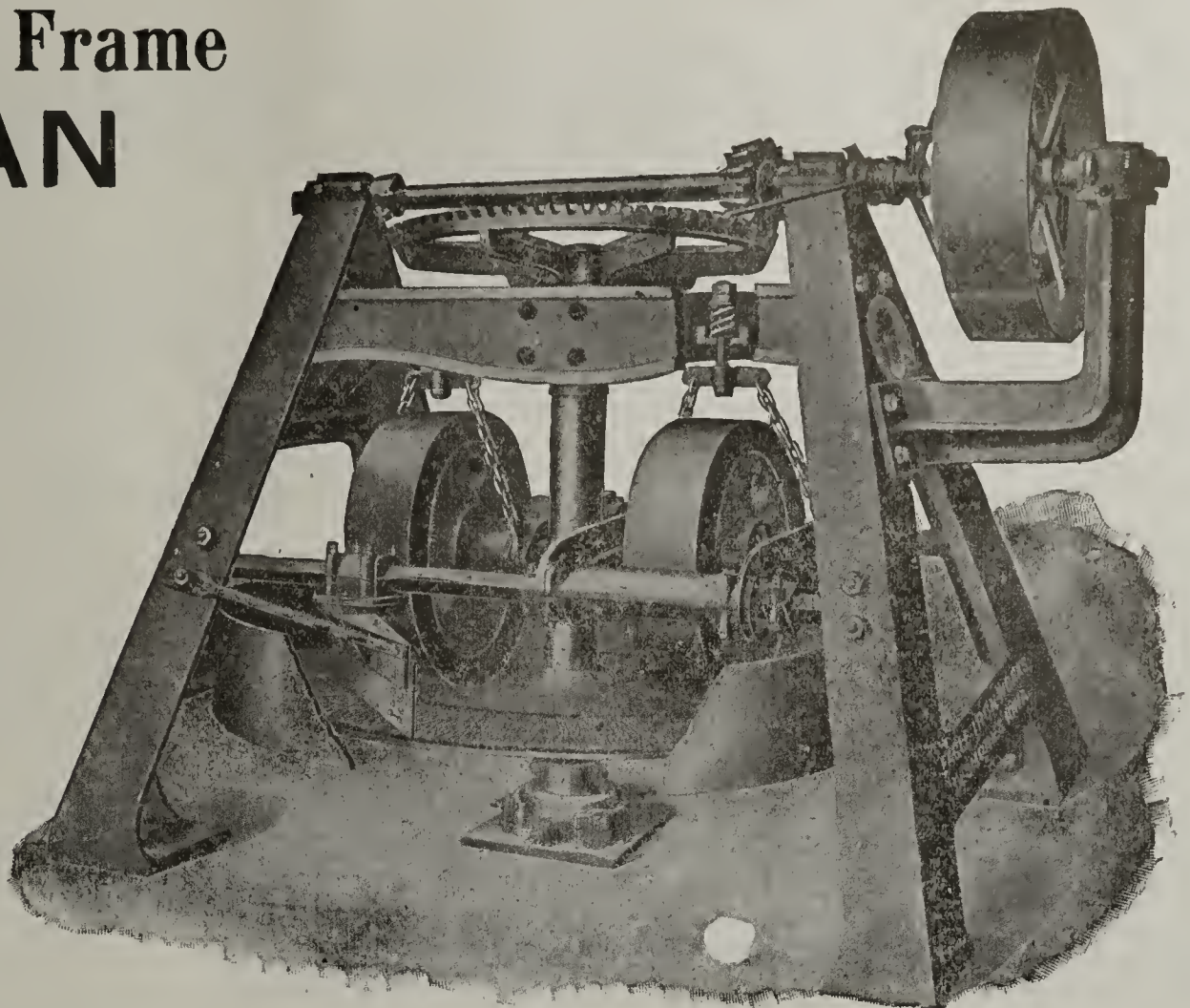
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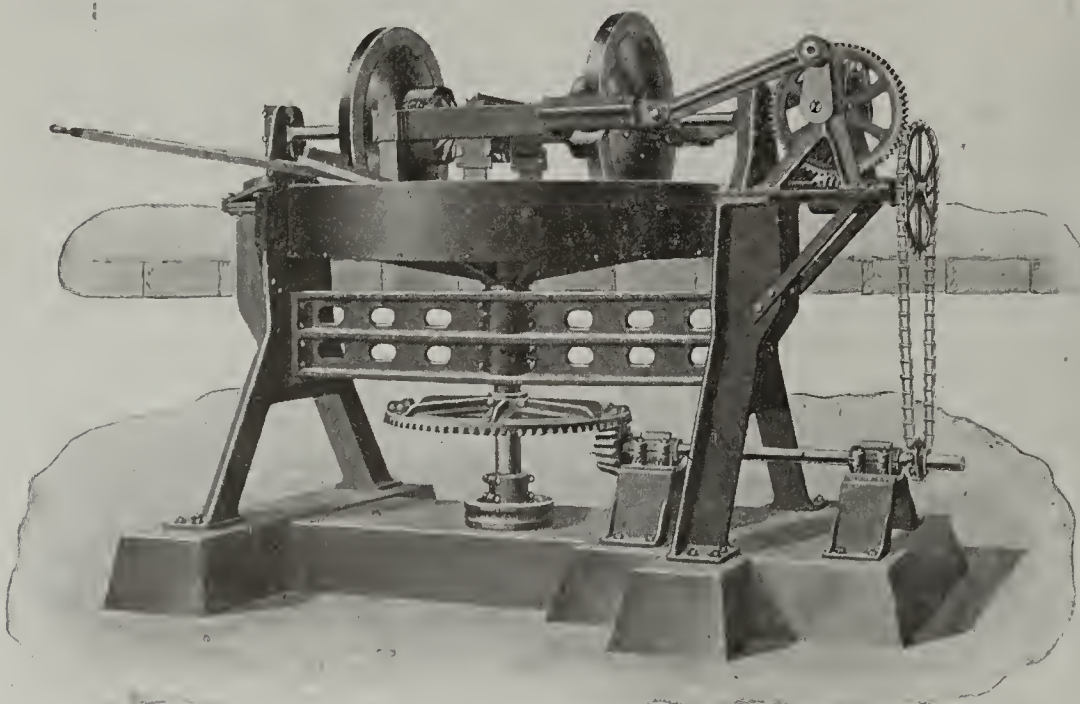
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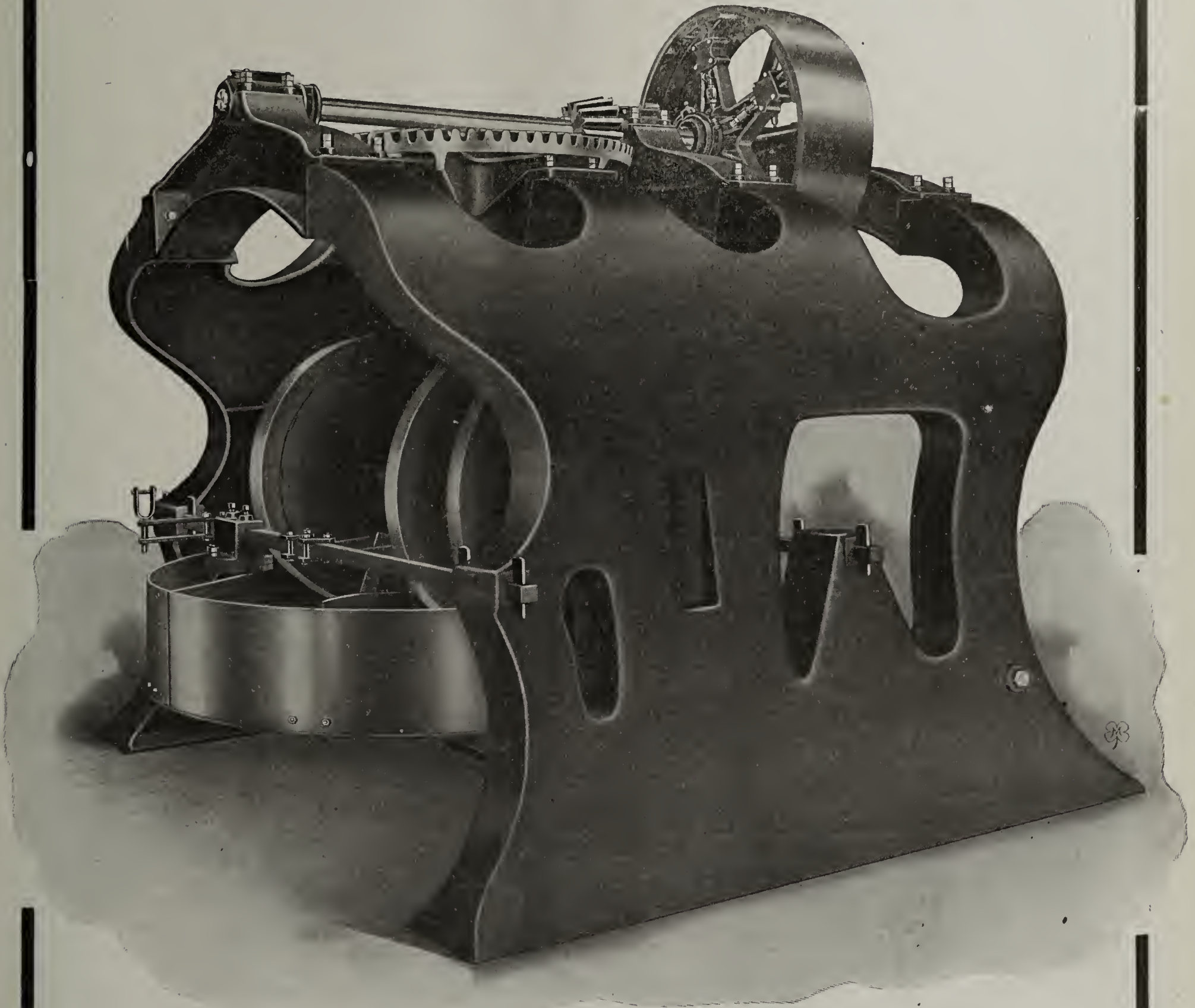
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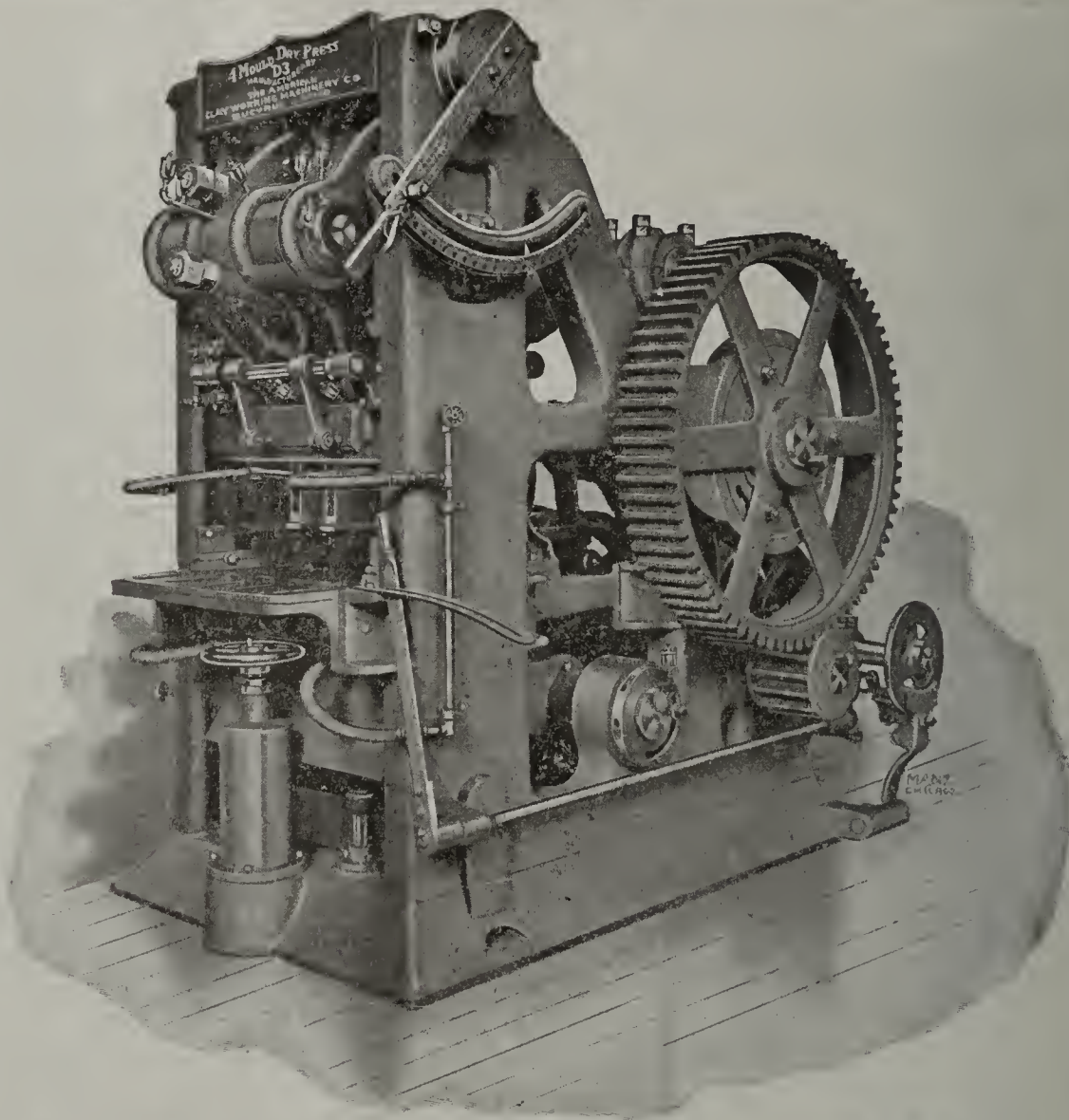
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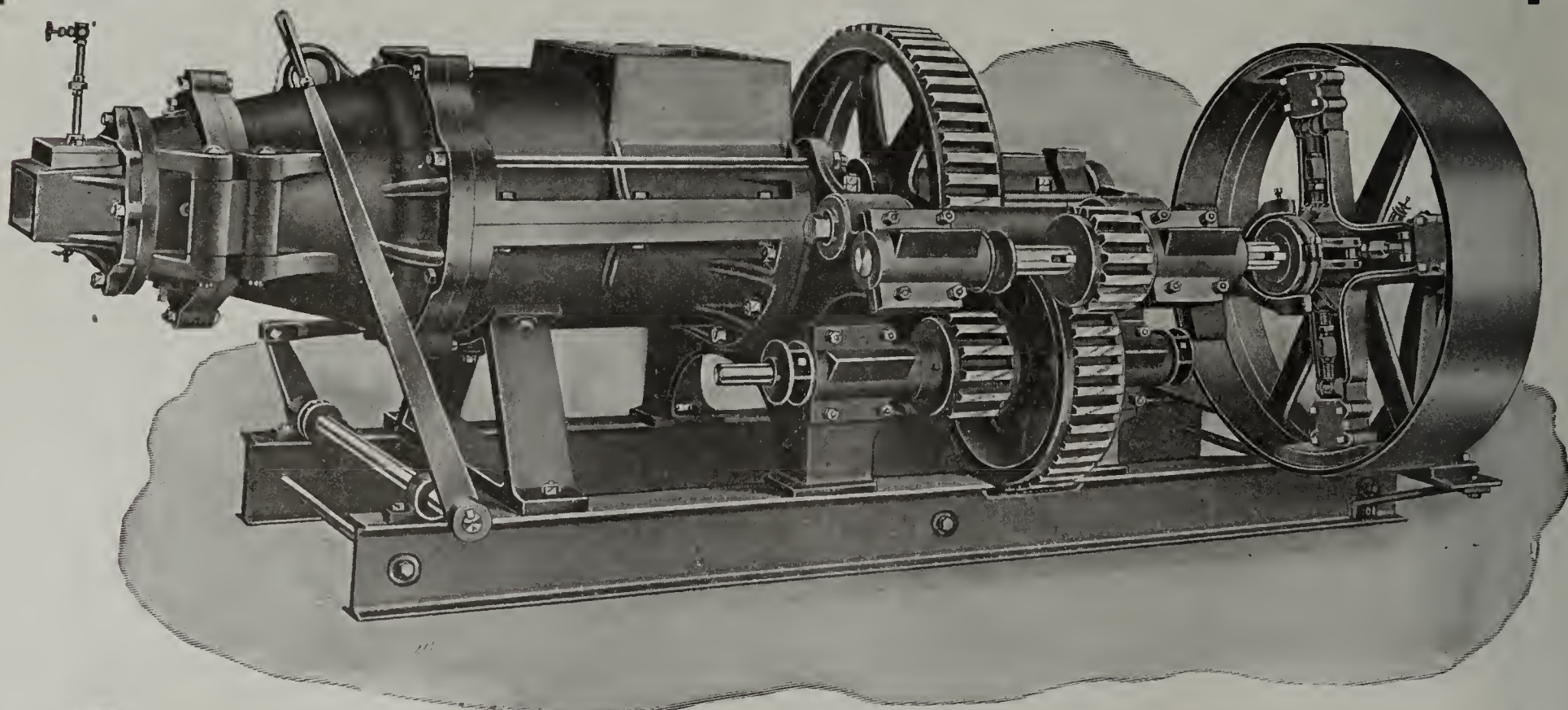


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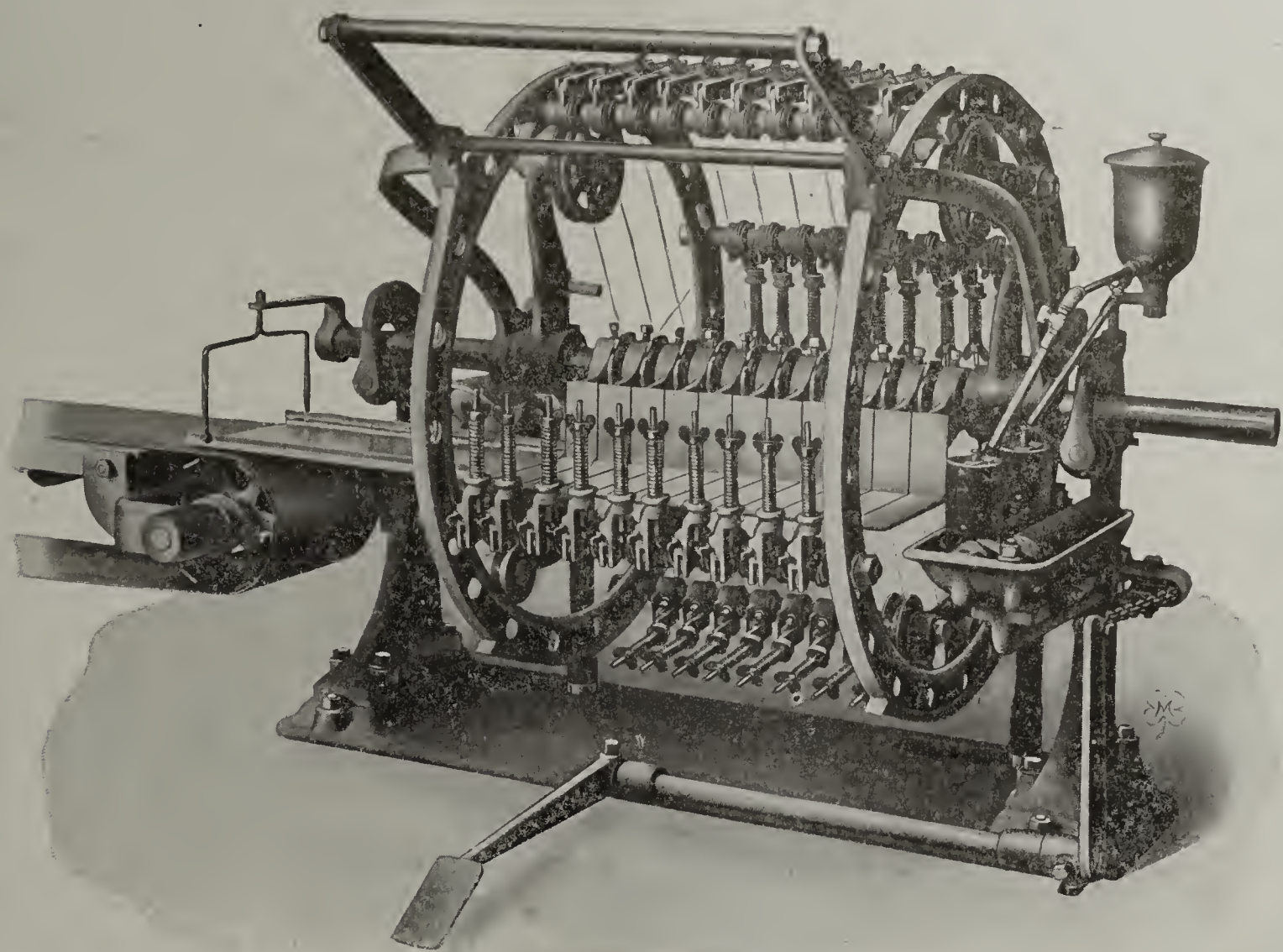


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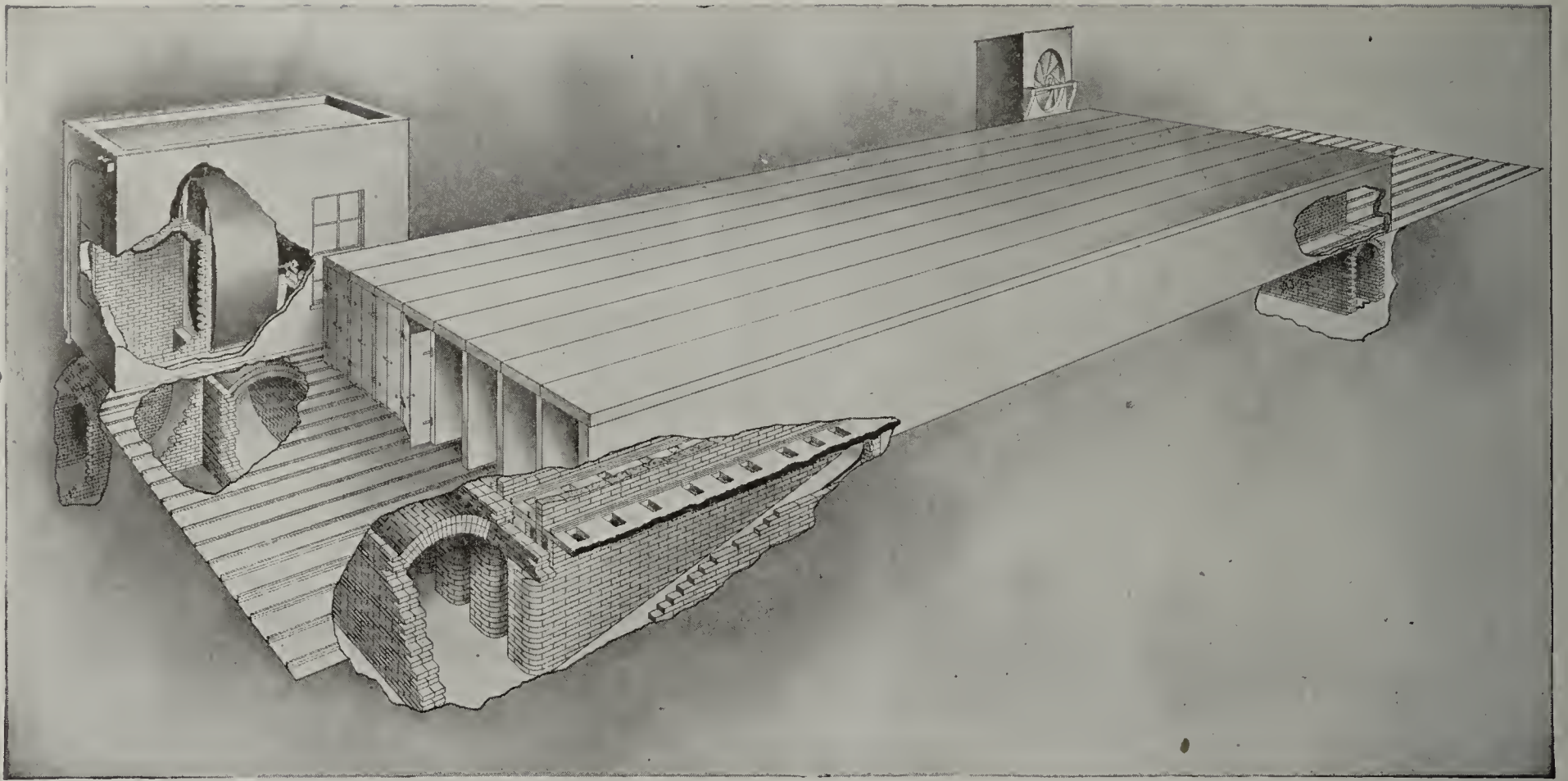
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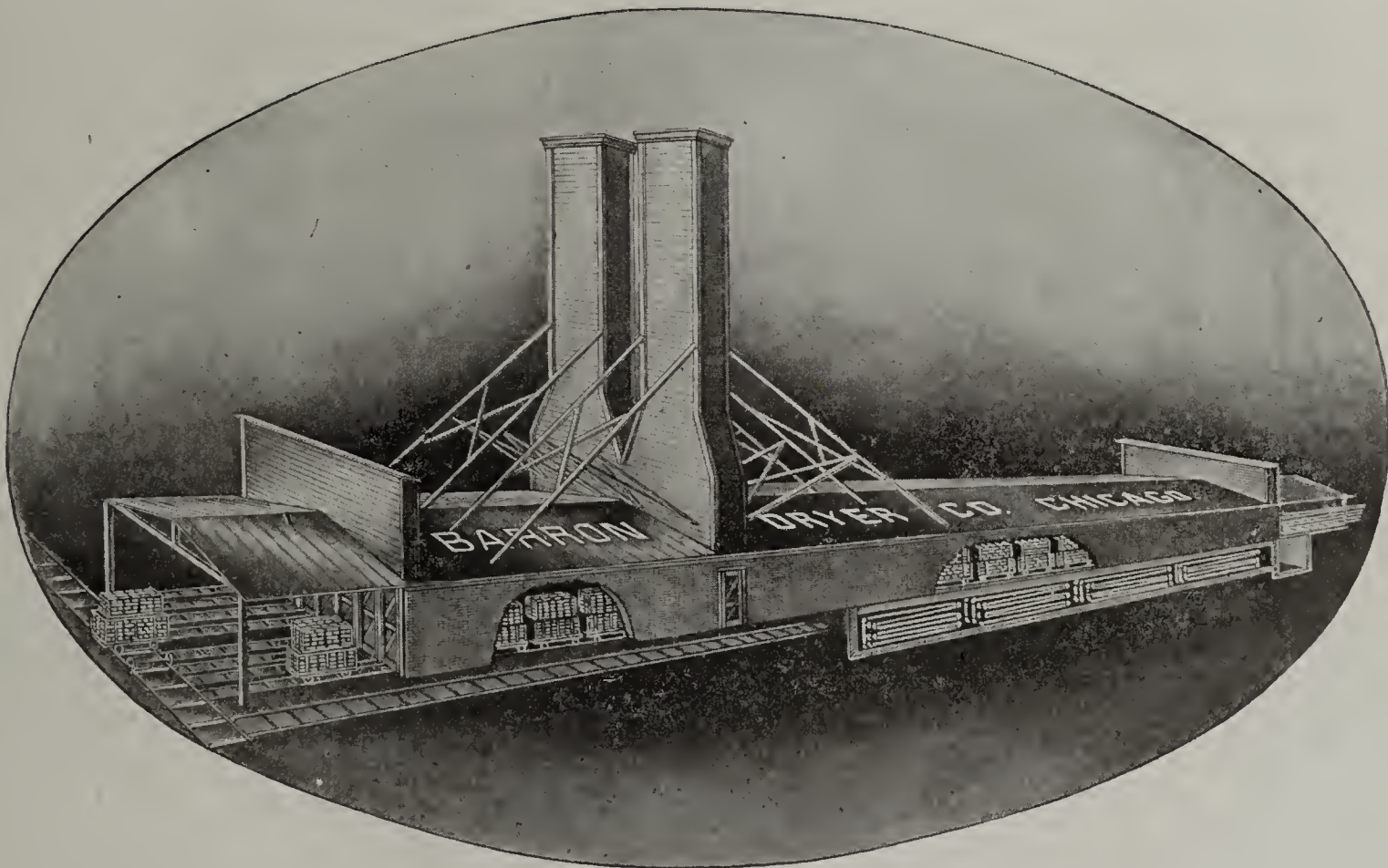
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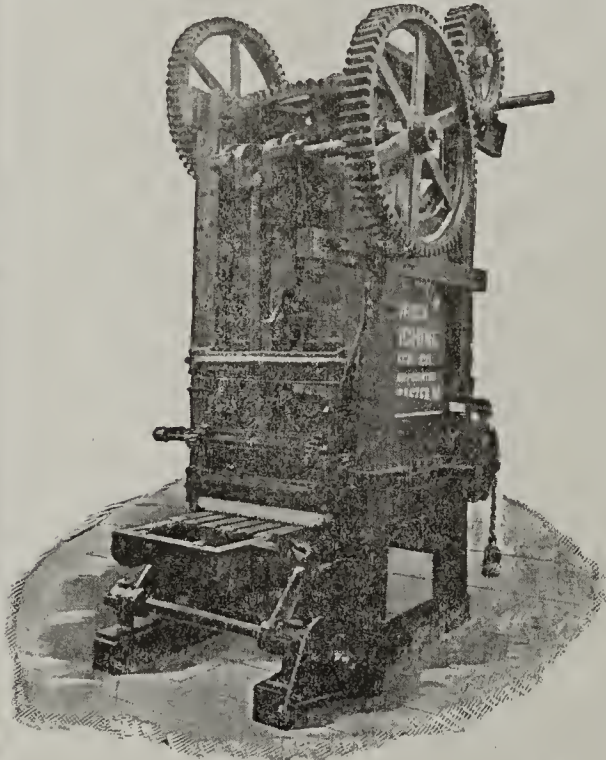
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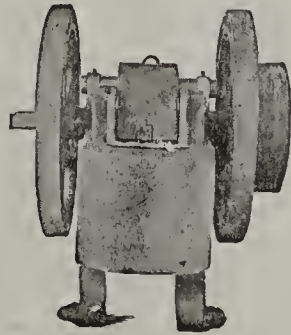
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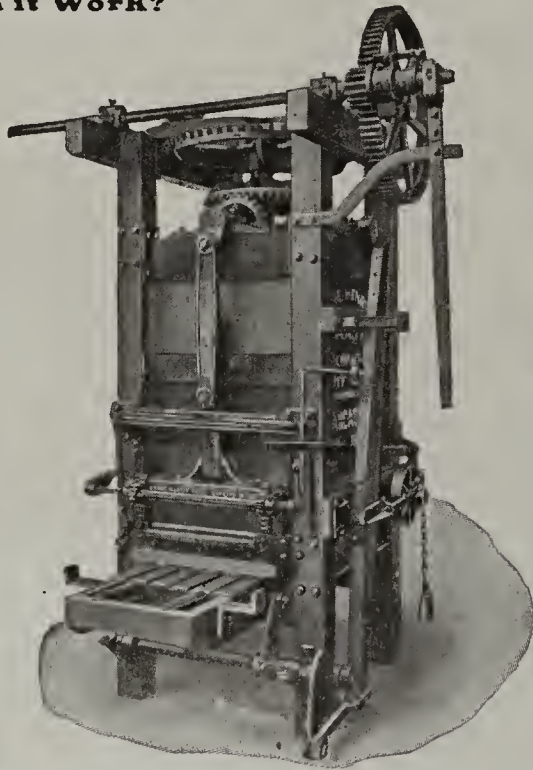
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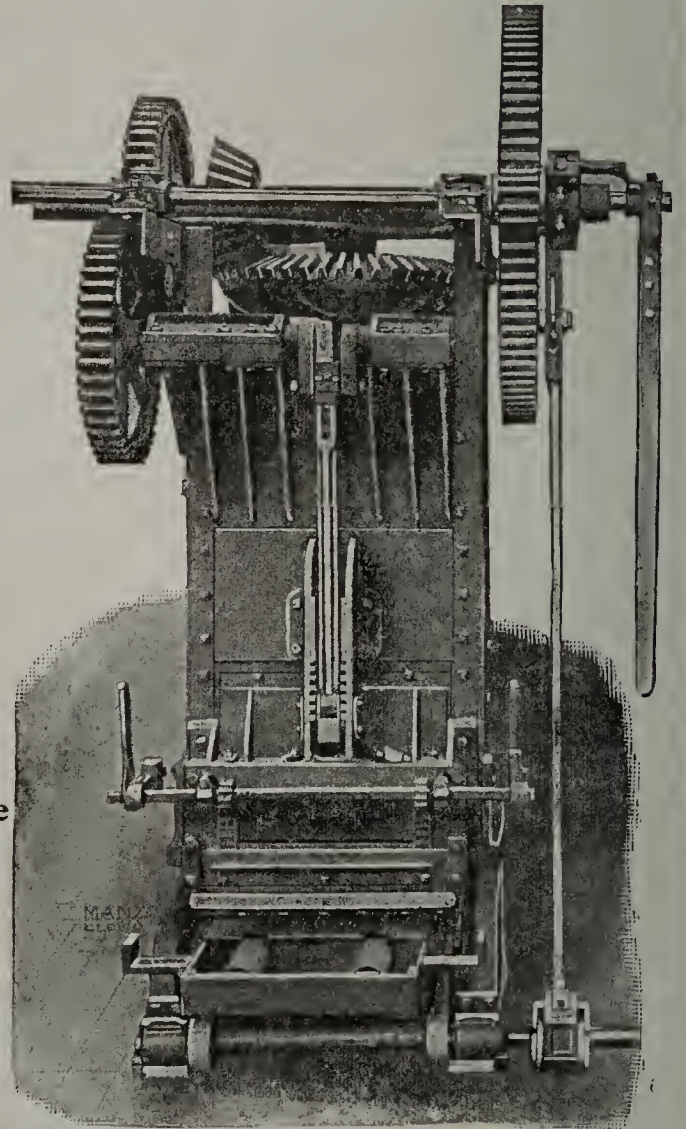
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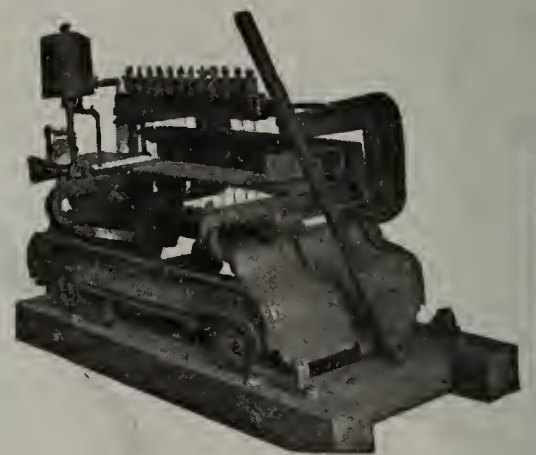
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SUPERIOR IN EVERY RESPECT TO ANY OTHER SYSTEM—Labor Saving Throughout. Dispenses with Truckers and car Pushers. Pallets Automatically Return to Brick Machine. Quick to install and low in price, and takes up very little Yard room.

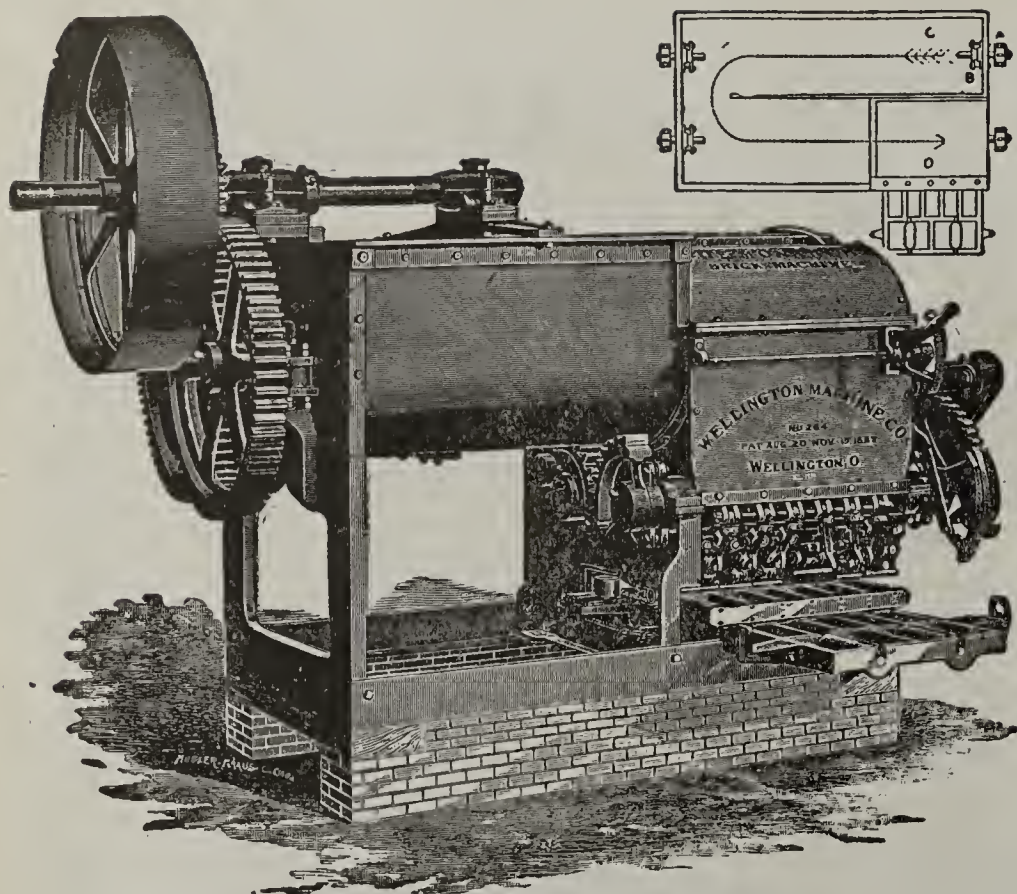
The sale and construction of the "Martin" Rack Pipe Steam Brick Dryer is under the direct supervision of the Factory Office at Lancaster, Pa.

FOR FURTHER INFORMATION, ADDRESS

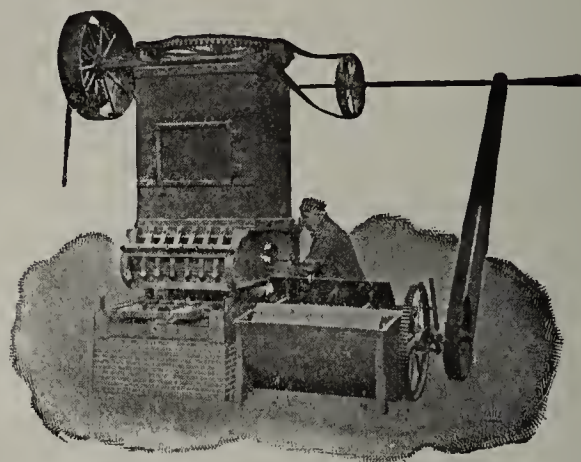
THE HENRY MARTIN BRICK MACHINE MFG. CO., Inc.

LANCASTER, PA., U. S. A.

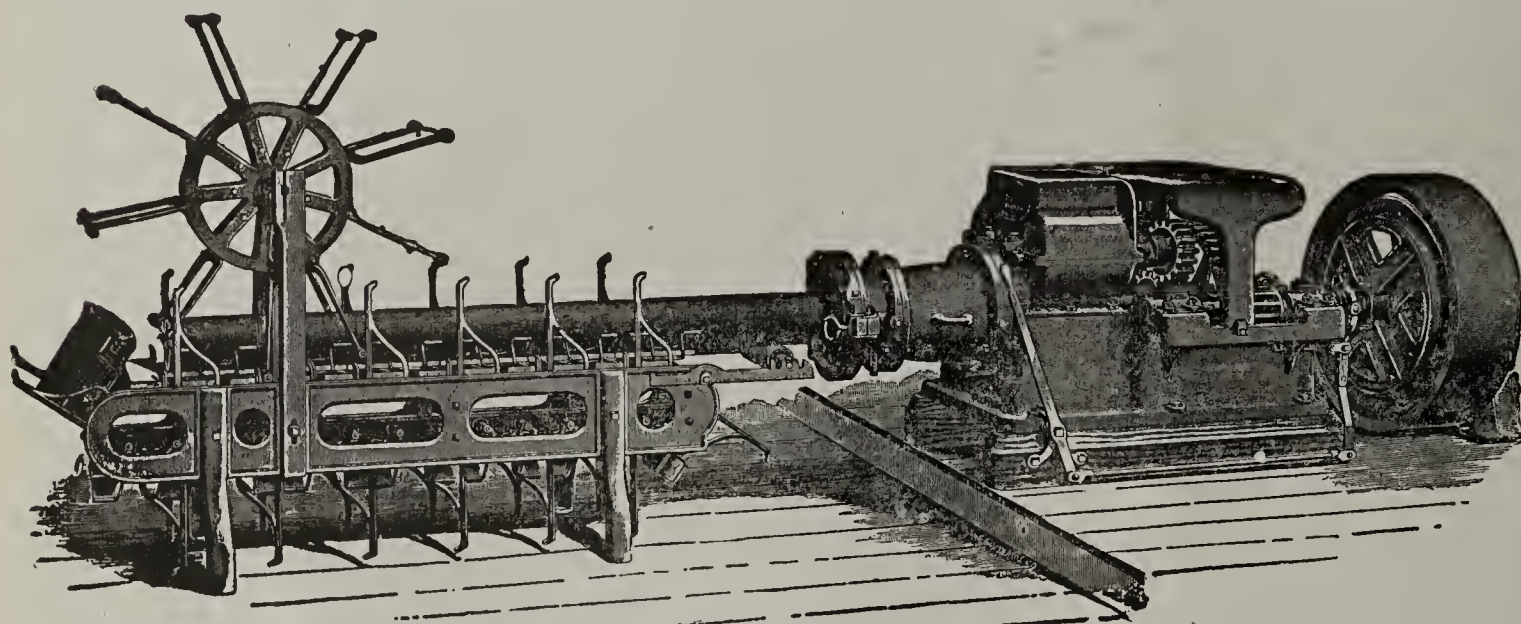
BRICK and TILE MACHINERY



MONARCH STOCK BRICK MACHINE
Capacity, from 80,000 to 50,000

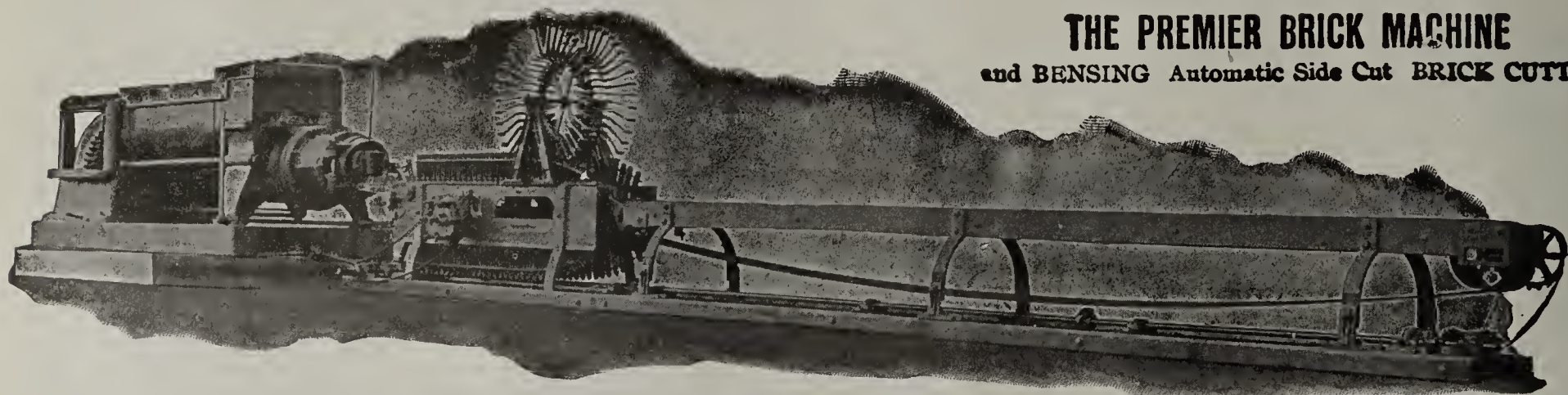


THE QUAKER
Horse or Steam Power. Capacity, 20,000 to 35,000



BRICK OR TILE MACHINE WITH AUTOMATIC TABLE

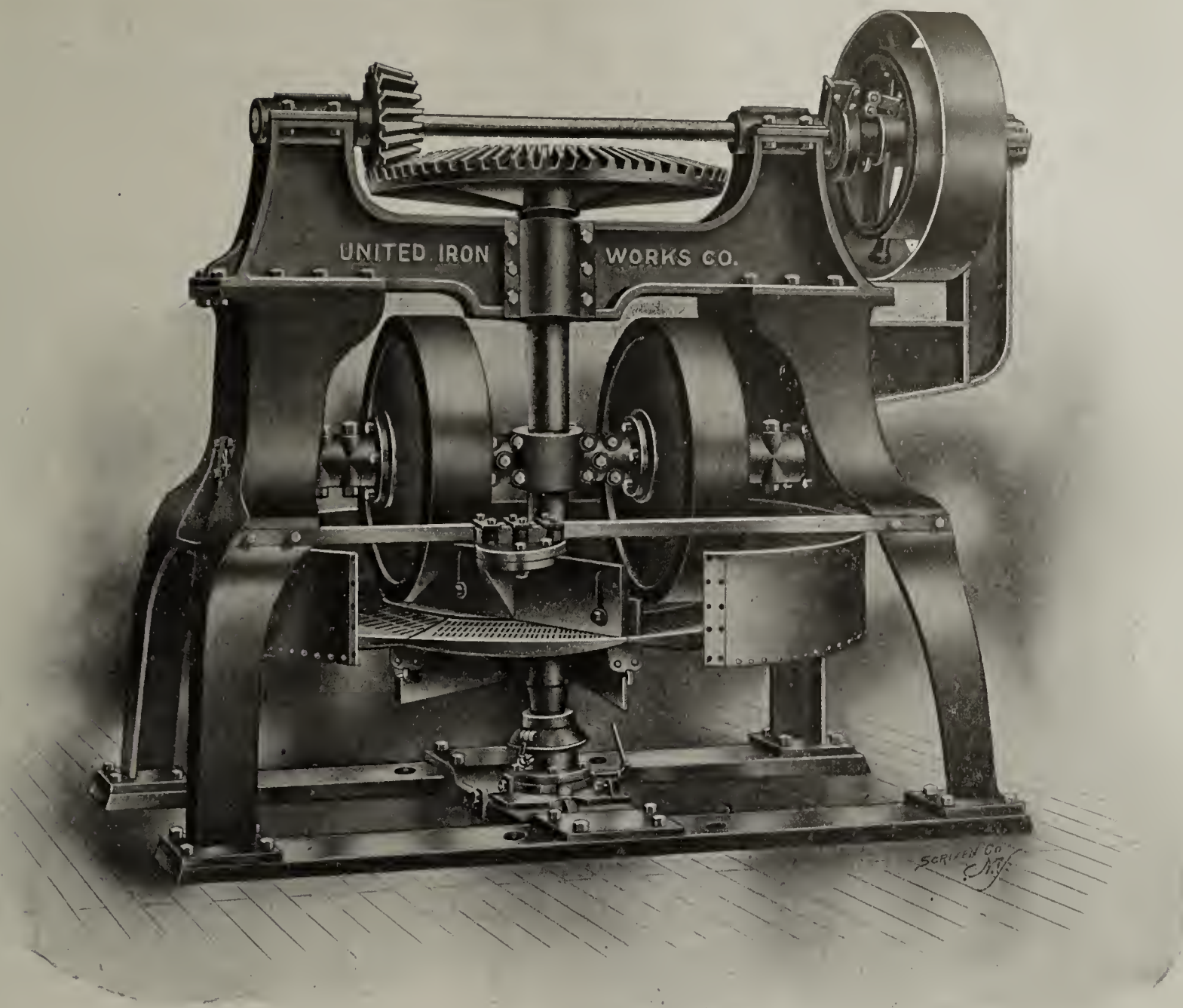
**"We
Fulfill
our
Guarantees."**



THE PREMIER BRICK MACHINE
and **BENSING Automatic Side Cut BRICK CUTTER**

We have a full line of Clay-Working Machinery, sand mold brick machines, auger brick and tile machines, Automatic side and end cut tables, dies, molds, barrows, trucks, sanders, represses, pug mills. *The only down cut, reel side brick cutter on the market for cutting face brick that do not require repressing.* We can guarantee to make you a better face brick with this cutter than you can get from any other cutter on the market.

B. E. LaDOW, - - Fredonia, Kansas.



**Here's What One of the Largest Cement Companies in the United States
Says About our "Pittsburg" Dry Pan:**

"Answering yours of the 19th instant; We are pleased to state that the dry pan which we purchased of you about a year ago has given entire satisfaction. We consider it one of the best, if not the best, dry pan manufactured and shall, indeed, be pleased to recommend it to prospective purchasers of such machinery."

Yours truly,

WESTERN STATES PORTLAND CEMENT CO."

And they Backed up their statement by ordering recently THREE MORE Pans from us

UNITED IRON WORKS COMPANY

General Offices: SPRINGFIELD, MO.

SPRINGFIELD, MO.; AURORA, MO.; IOLA, KAS.; PITTSBURG, KAS.
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ALL OVER THE WORLD

THESE FAMILIAR SIGNS
MARK SINGER SHOPS

ALL OVER THE WORLD



THE ONLY SHOP WHERE
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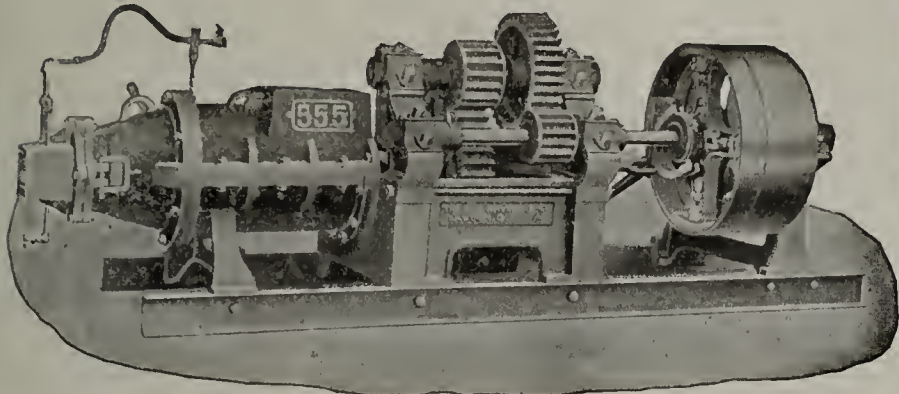
SEWING MACHINES ARE
SOLD RENTED OR EXCHANGED

SEE SINGER STORE

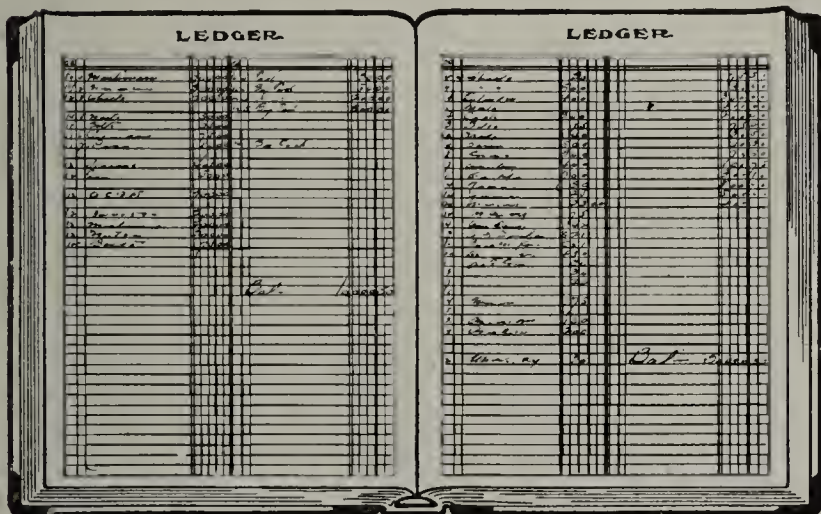
IN YOUR OWN CITY



"RAYMOND'S"



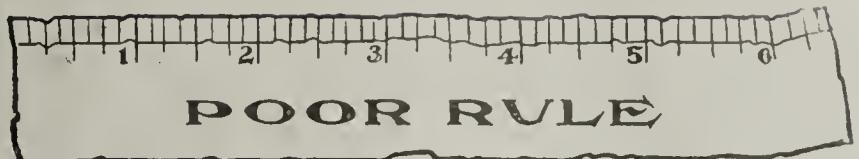
THE BEST



HANDSOME PROFITS



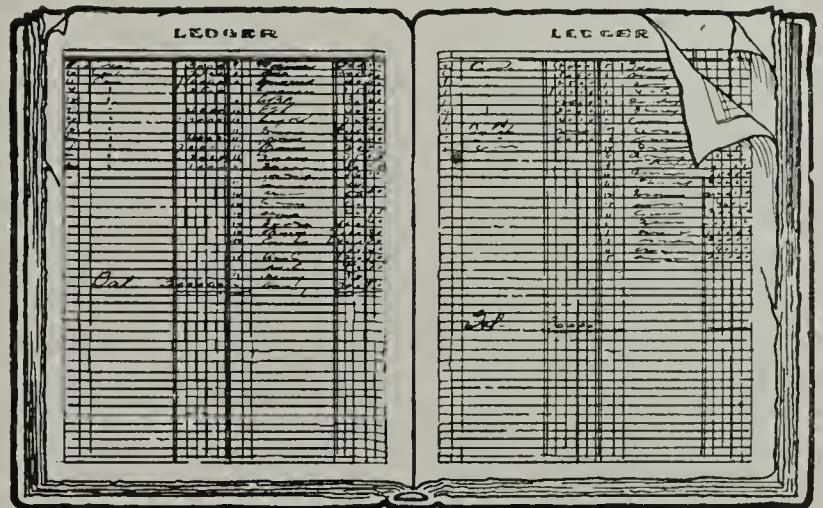
ENJOY LIFE



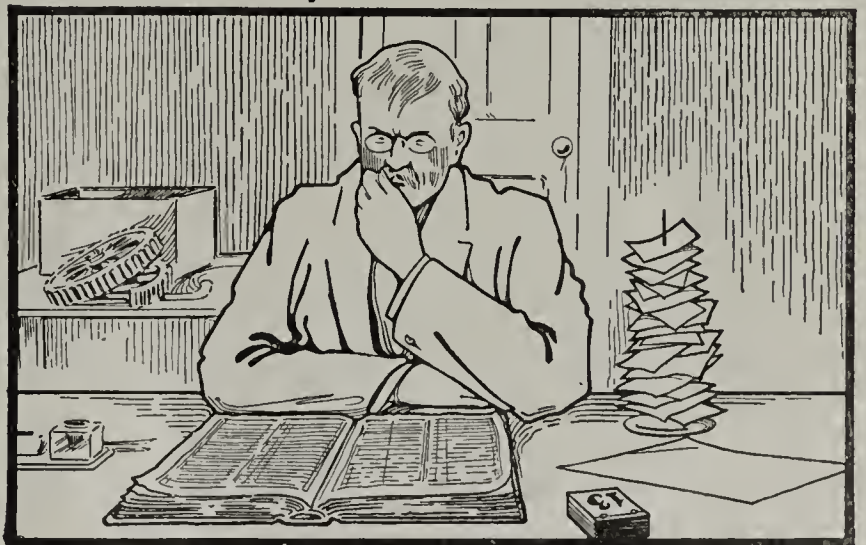
OTHERS



OTHERS



OTHERS



OTHERS

The C. W. RAYMOND CO.

DAYTON, OHIO, U. S. A.



Everything for the Brickmaker

Catalogue for the Asking

SAND-LIME BRICK MACHINERY

BOYD QUALITY

MODERN METHODS



NO EXPERIMENTING

More Boyd Presses making sand-lime brick than any other press on the market. The Boyd Press is selected and purchased by those who want the best. Our "Special" Combination Block and Brick Press is the only successful machine in the world for making large building blocks and stones.

Sand-Lime Brick Plants designed and complete machinery equipment furnished, installed and set in operation. Machinery and product guaranteed.

Correspondence solicited.

CHISHOLM, BOYD & WHITE COMPANY

OFFICE AND WORKS, 57th AND WALLACE STREETS

CHICAGO

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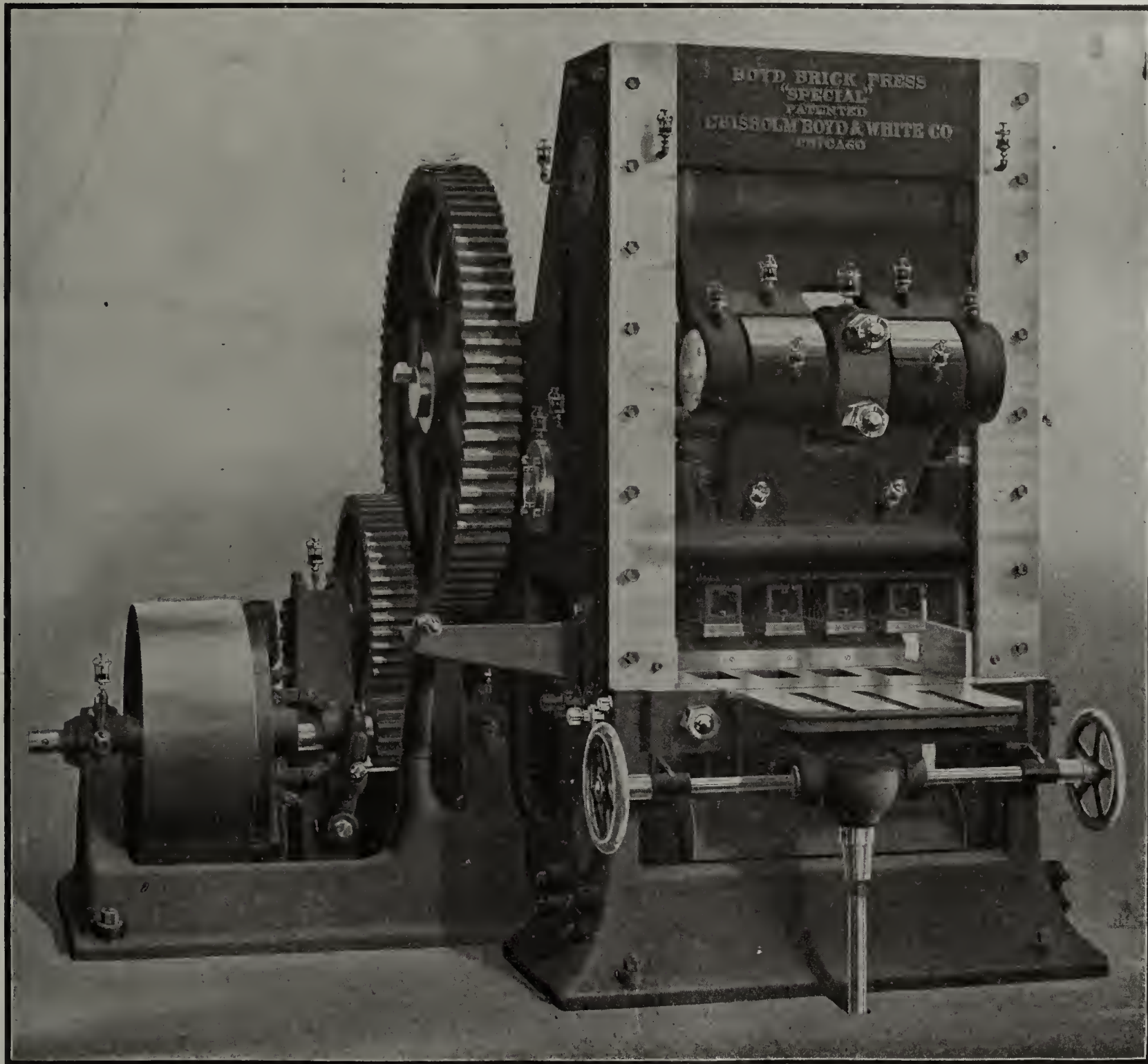
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ILLINOIS

THE BOYD BRICK PRESS

FOUR - MOLD "SPECIAL"



THE BOYD BRICK PRESS exerts greater pressure, holds it longer, puts more clay into brick, and makes stronger brick than any other Brick Press made. Especially adapted for working shales, and is the only successful machine for making fire brick.

ALL BOYD PRESSES are fitted with our IMPROVED PATENTED MOLD BOX, the liners of which are made of the hardest and toughest known metal, which can be reground at low cost when worn. The molds can be changed in a few minutes.

ITS RECORD: More Boyd Presses in actual operation than of all other Press Brick Machines combined. Write for Catalogue.

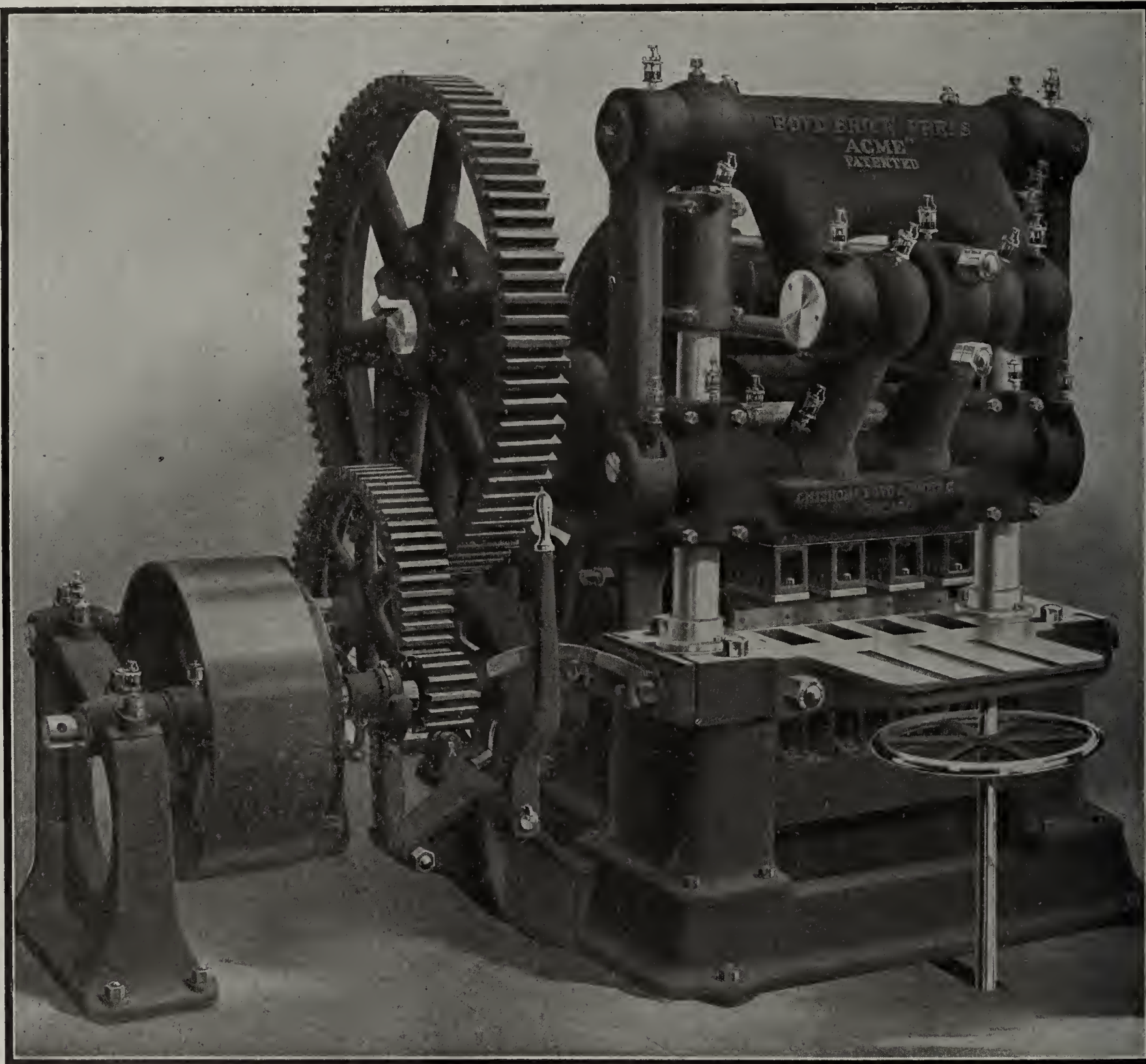
Chisholm, Boyd & White Co.,

OFFICE AND WORKS: 57th and WALLACE STREETS

Chicago, Illinois

THE BOYD BRICK PRESS

FOUR - MOLD "ACME"



IT'S NAME A GUARANTEE. The FOUR-MOLD PRESS above illustrated is our latest improved machine of this design. Over ONE HUNDRED now in use. Especially adapted for working shales.

A BUSINESS PROPOSITION

We will send to any responsible party a BOYD BRICK PRESS ON TRIAL and subject to purchase after the making and burning of one or more kilns of brick. We take the machine back if not satisfactory. We design and equip brick plants complete. Correspondence Solicited.

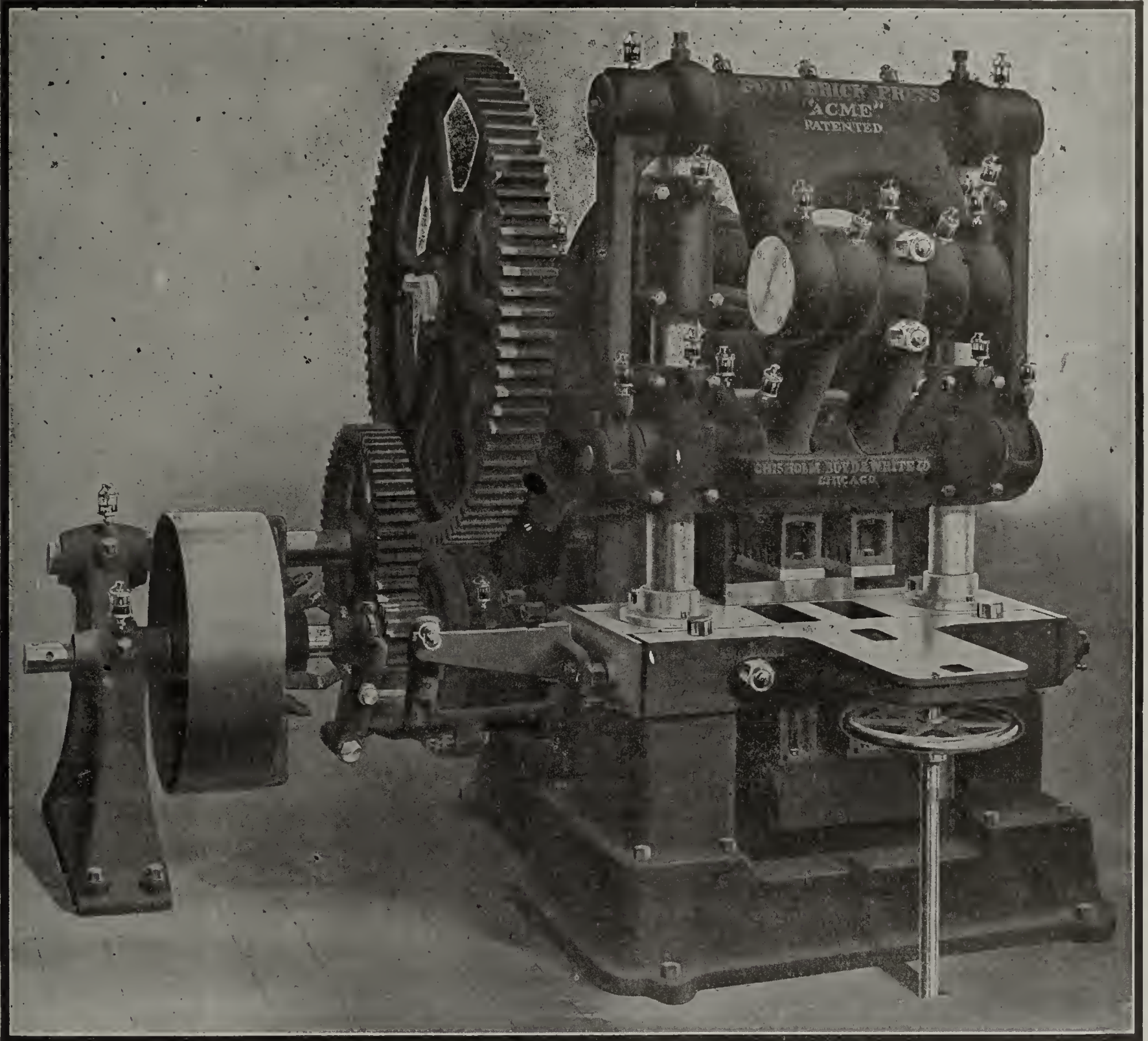
Chisholm, Boyd & White Co.

OFFICE AND WORKS: 57th and WALLACE STREETS

Chicago, Illinois

THE BOYD BRICK PRESS

TWO - MOLD "ACME"



The Two-MOLD PRESS above illustrated, is especially adapted for Brick Plants of small capacity, and for making ornamental and shape bricks it has no superior. It has never failed to give entire satisfaction, and is guaranteed for two years against breakage.

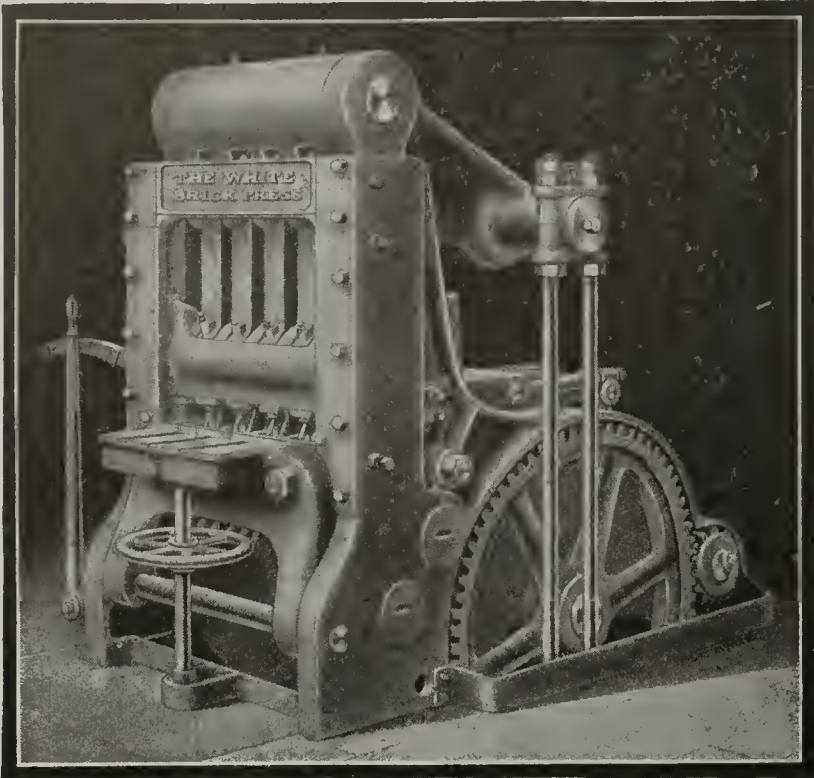
BRICK PRESSES are too costly for any one to experiment with. SEVENTEEN YEARS of practical experience back of each Boyd Press.

CONSIDER THIS: Your Brick Plant may be properly constructed, well located, with an abundance of good clay or shale, and a good market at your door; but unless your Brick Press is always ready for a day's work you will not get proper returns from your investment.

Chisholm, Boyd & White Co.

OFFICE AND WORKS: 57th and WALLACE STREETS

Chicago, Illinois



New White Press

Especially designed for making Sand-Lime Brick. Strongest, Most Powerful, Most Durable, and Most Convenient. Molds removable; can be changed in seven minutes.

Send for Special Press Catalogue.

SAND-LIME BRICK

Complete Plants installed, started and operated until the first 100,000 brick are made. No risks, delays or expensive experimenting.

Strongest possible guarantees. This is the *Only Safe Method* for parties going into any new industry.



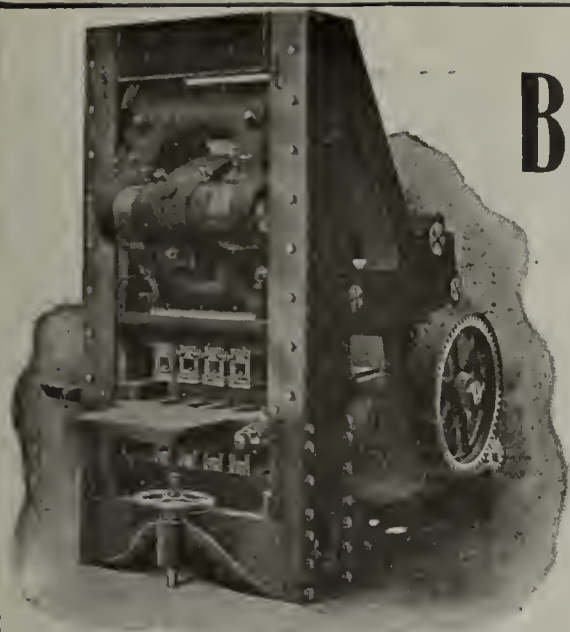
Our Latest
Illustrated Booklet
gives all details.
Mailed Free.

AMERICAN SAND-LIME BRICK CO.

1308 GREAT NORTHERN BLDG., CHICAGO

BERG BRICK PRESS

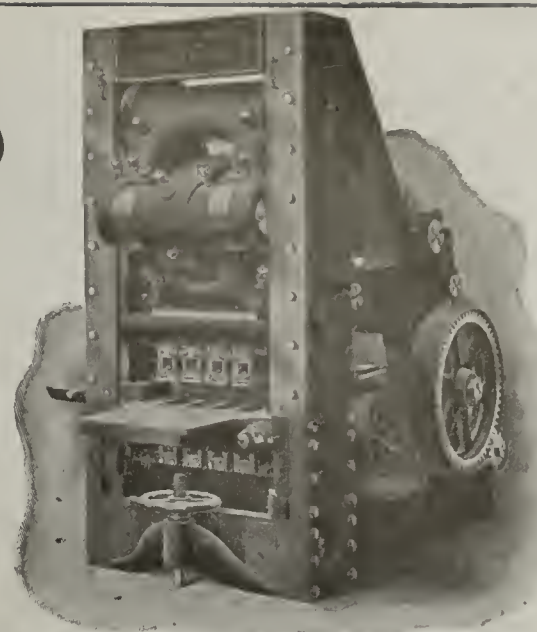
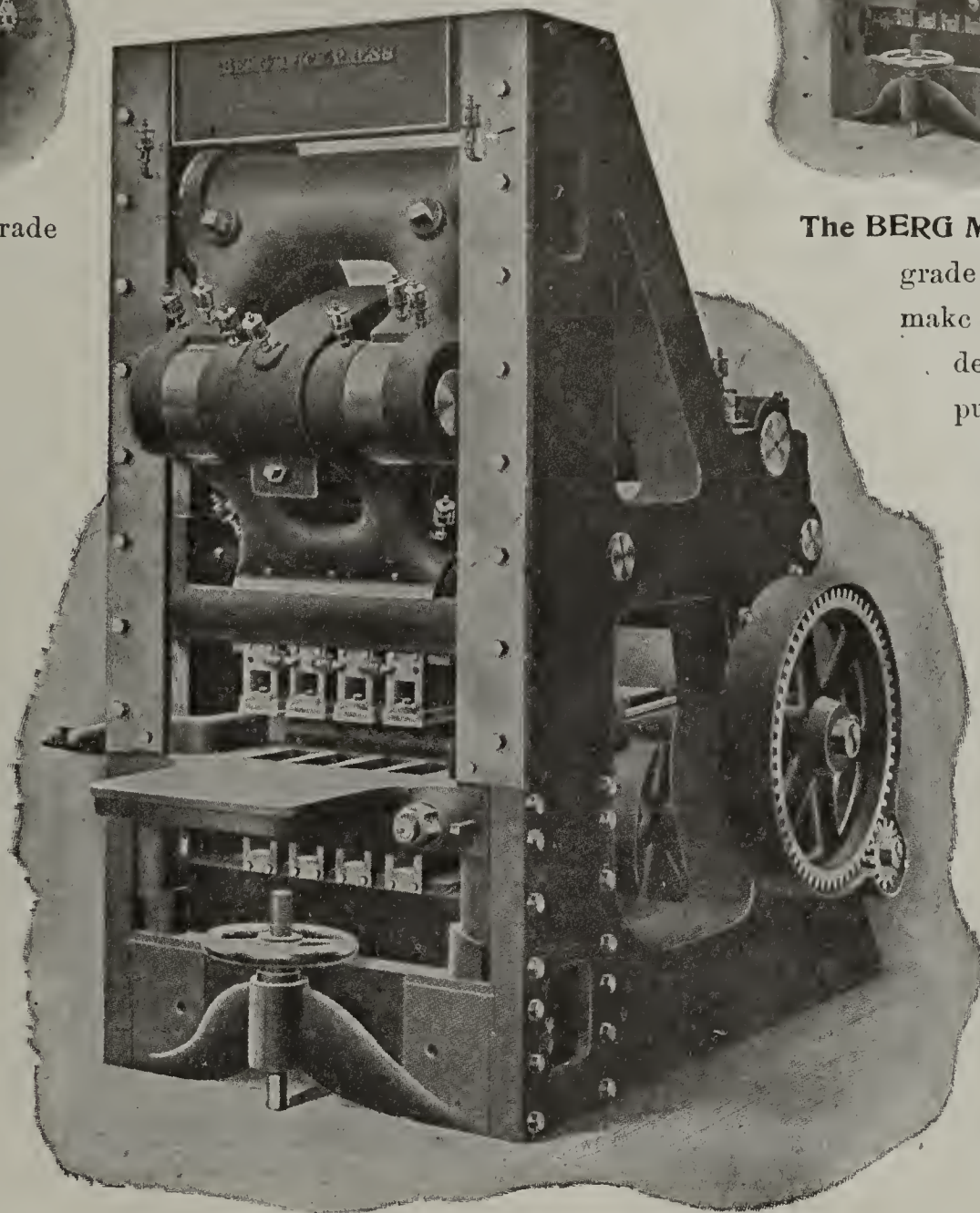
The highest development of the Art of Brickmaking Machinery so pronounced by the United States Government.



The BERG for the highest grade of pressed brick of shale or clay. It makes all kinds of shapes and sizes of brick. Changes from one shape to another can be made in less than an hour's time.

First-Class Workmanship. Cut Gearing. Fully Warranted.

The BERG makes the best sand-lime brick and cheapest because it is the strongest machine and gives the highest pressure. Thirty-five sand-lime plants in United States use the BERG Brick Press SUCCESSFULLY.



The BERG MAKES the highest grade of fire brick. Can make all kinds of shapes desired for fire-brick purposes.

Three distinct pressures make the brick evenly pressed all through. No granulated centers of the brick.

The BERG is the best for sand and cement because of its strong pressure. Uses less ce-

ment, makes cheaper brick.

The 1905 Berg Press

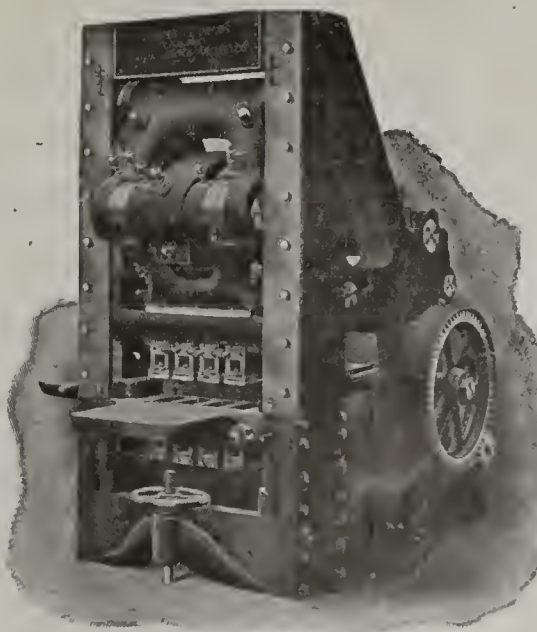
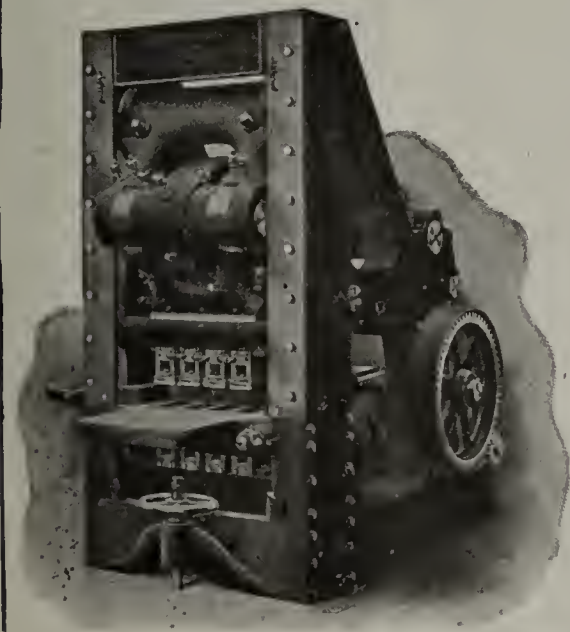
Many other steps further forward in improvement and highest grade of material and workmanship, also cut gearing. Fully guaranteed as to its success. Manufactured by its inventor in Toronto, Canada, exclusively. Plans and specifications on the different kinds of plants furnished, also all equipments.

For prices and full particulars, address

A. BERG & SONS

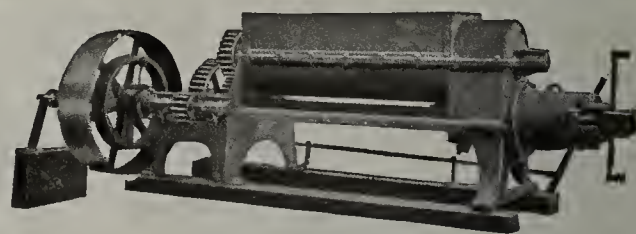
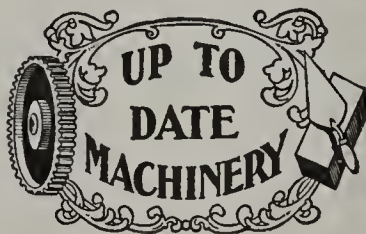
OFFICE: MANNING CHAMBERS

TORONTO, ONT., CANADA





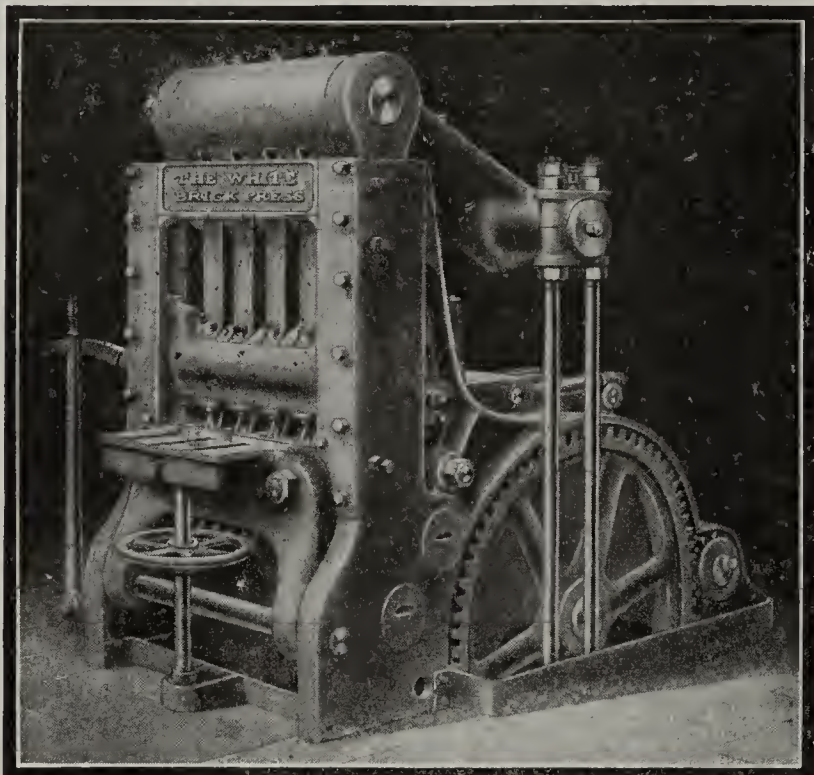
Auger Machine



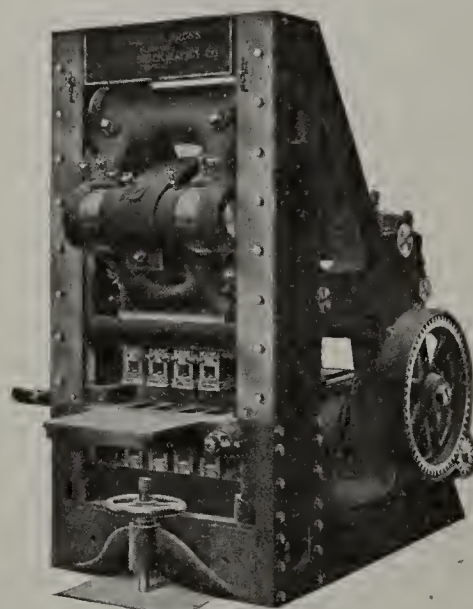
Combination Machine

UP=TO=DATE MACHINERY

For Making all Kinds of Brick—
Dry Pressed, Wire Cut,
Sand Moulded



New White Press



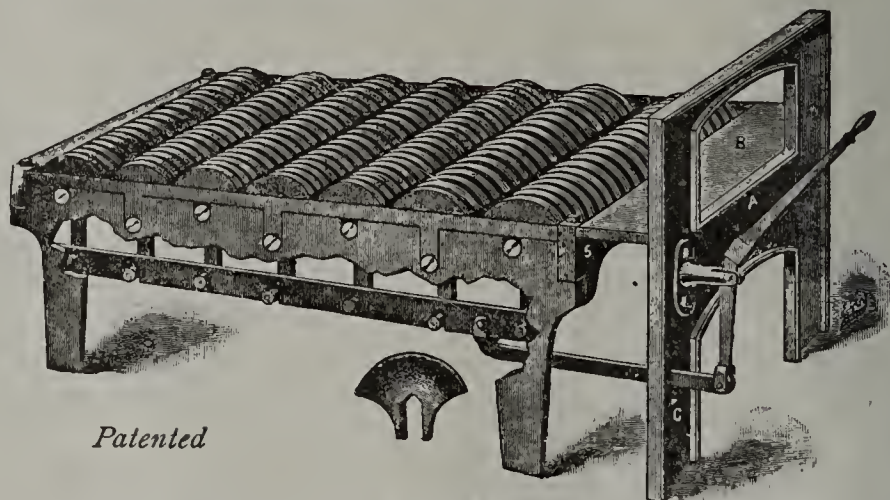
New Model Berg Press

Full
Line of
Brickyard
Specialties
and
Supplies

In addition to our well known BERG PRESS, we are now bringing out our new WHITE PRESS for clay-brick work. It is especially recommended for difficult and refractory clay. By far the most powerful press built. Removable molds, changed in SEVEN minutes. Special catalogue and full particulars on application.

Something New for 1907

Rocking and Dumping Grates for Kilns. Save coal, save labor, and do away with checked brick. Send for "Lecture on Combustion," by [His Satanic Majesty.



Patented

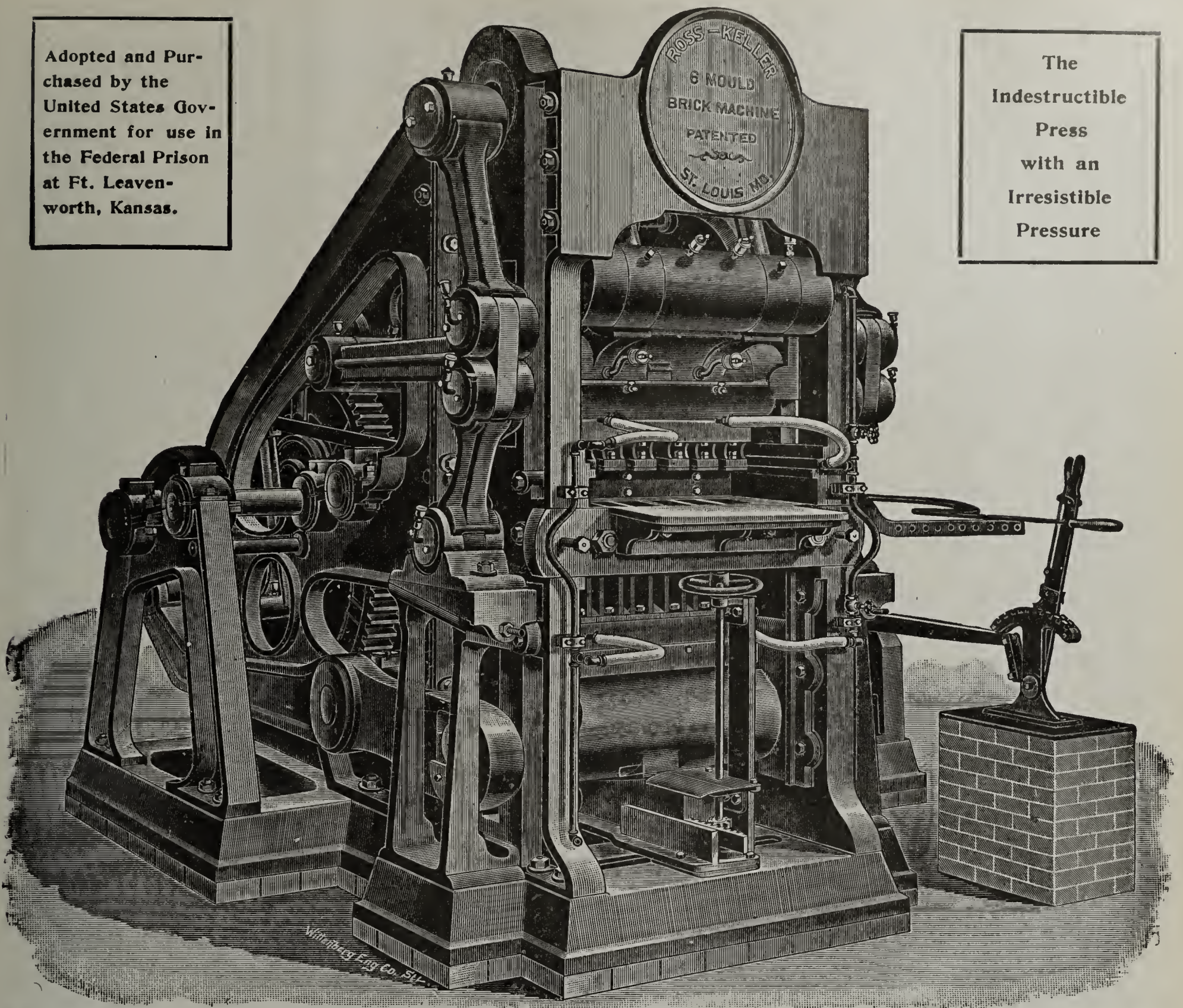
U. S. SELF CLEANING GRATE
In position ready for use. Part of frame cut away to show connection below.

Chicago Brick Machinery Co.

1308 Great Northern Bldg.

Adopted and Purchased by the United States Government for use in the Federal Prison at Ft. Leavenworth, Kansas.

The Indestructible Press with an Irresistible Pressure



WE BUILD

Sand-Lime Brick Plants, Shale and Clay Brick Plants

ARE ALSO SOLE MANUFACTURERS OF THE

Ross-Keller Triple Pressure Brick Press

The strongest and most efficient Brick Machine made, and the only Press that gives three distinct pressures to the brick

ROSS-KELLER TRIPLE PRESSURE BRICK MACHINE CO.

OFFICES FULLERTON BUILDING,

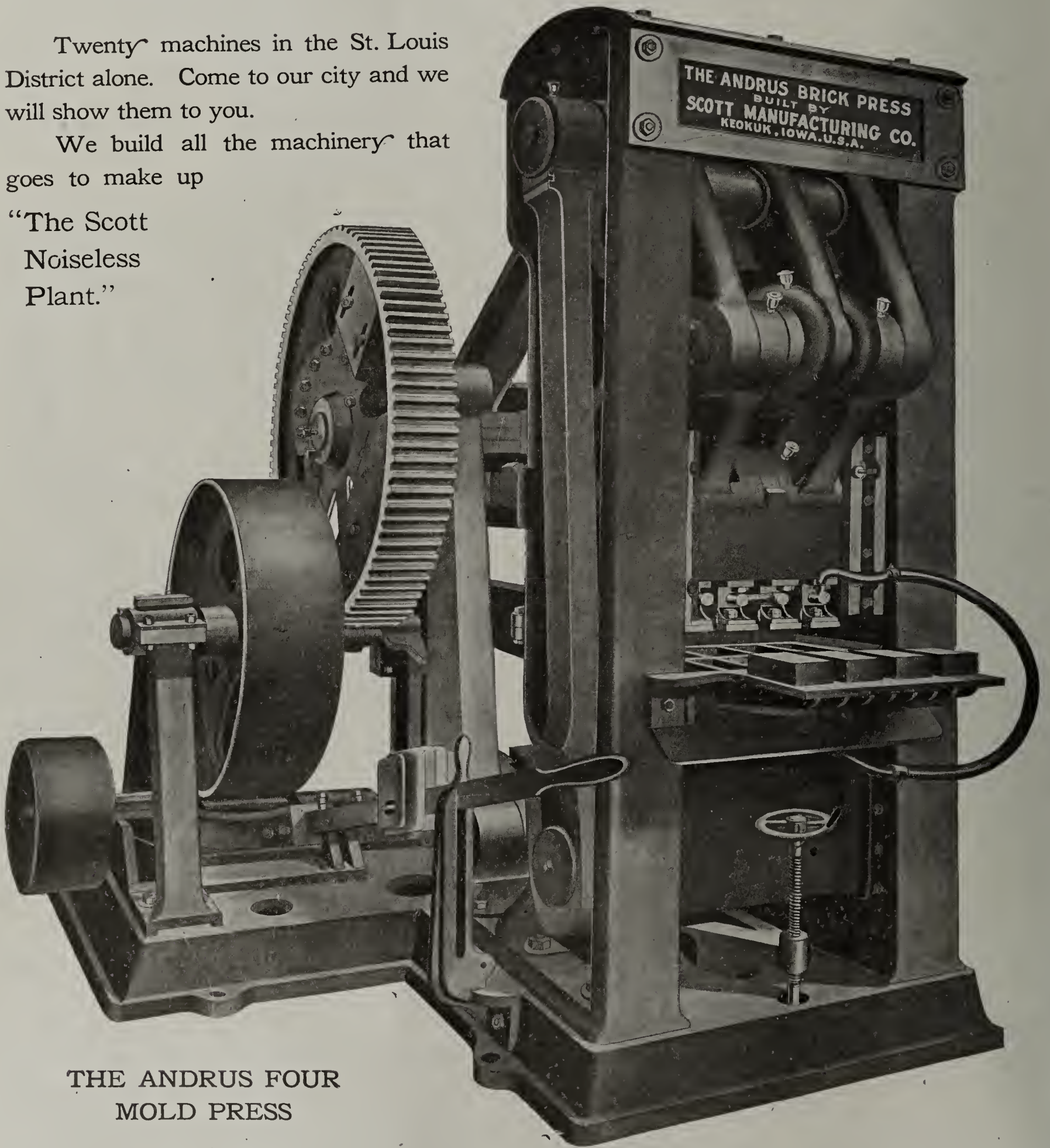
ST. LOUIS, MO.

This is the Press That Scott Builds

Twenty machines in the St. Louis District alone. Come to our city and we will show them to you.

We build all the machinery that goes to make up

"The Scott
Noiseless
Plant."



THE ANDRUS FOUR
MOLD PRESS

SCOTT MANUFACTURING CO.

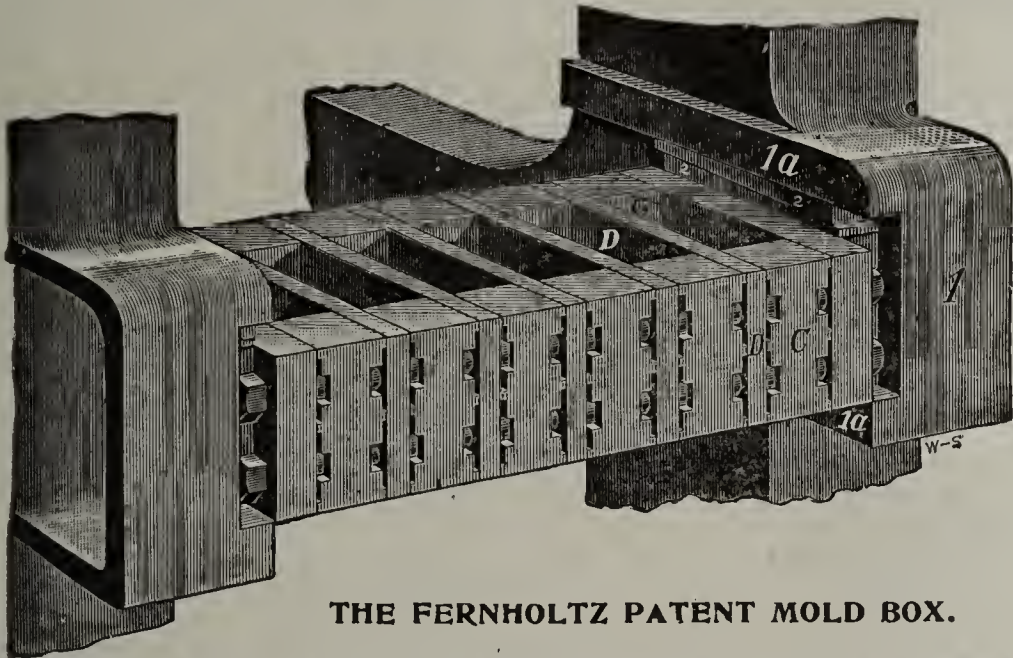
602 Commonwealth Trust Building :: St. Louis, Mo.

The Fernholtz Brick Machinery Co.

Manufacturers of

The Celebrated Fernholtz Dry Press

Four mold Press 20,000 daily capacity. Six mold Press 30,000 daily capacity

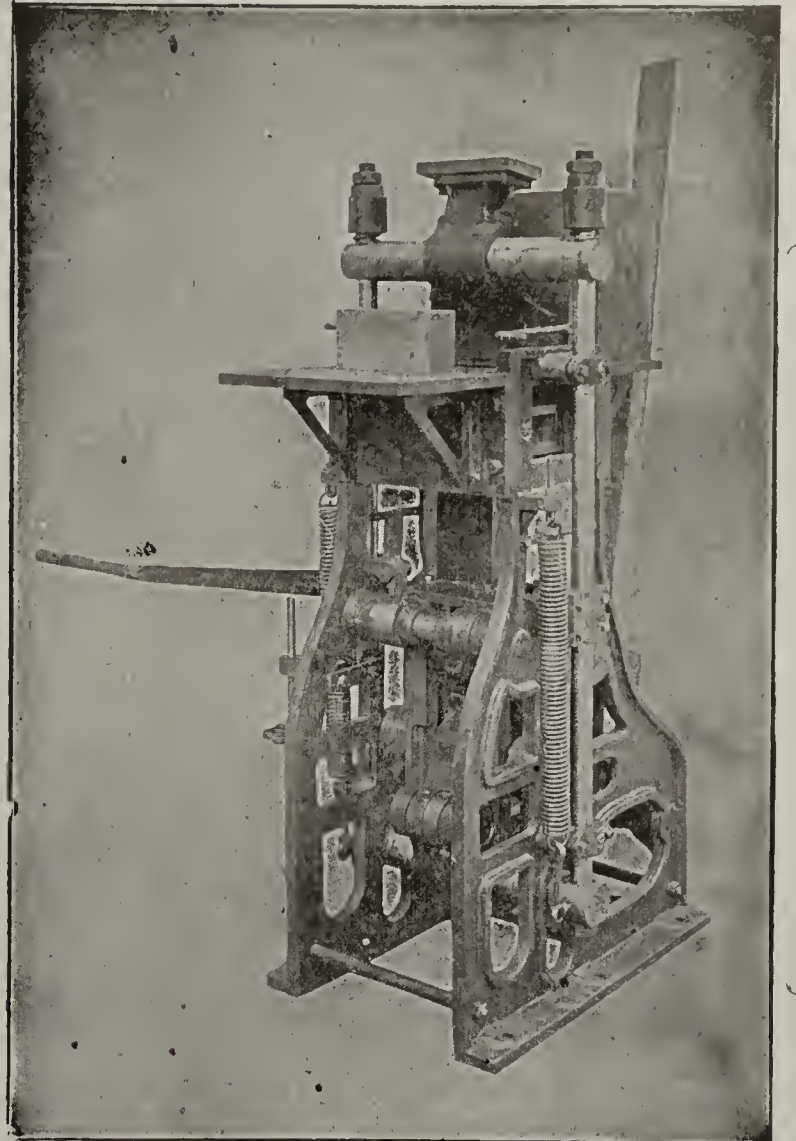


THE FERNHOLTZ PATENT MOLD BOX.

No old style Liners. The Blocks are adjustable and molds are always one size. We have put them in most all makes of Dry Press machines. Easily and quickly adjusted. They are made entirely out of chilled iron, the hardest known metal.

GRATH PATENT HAND POWER PRESS.

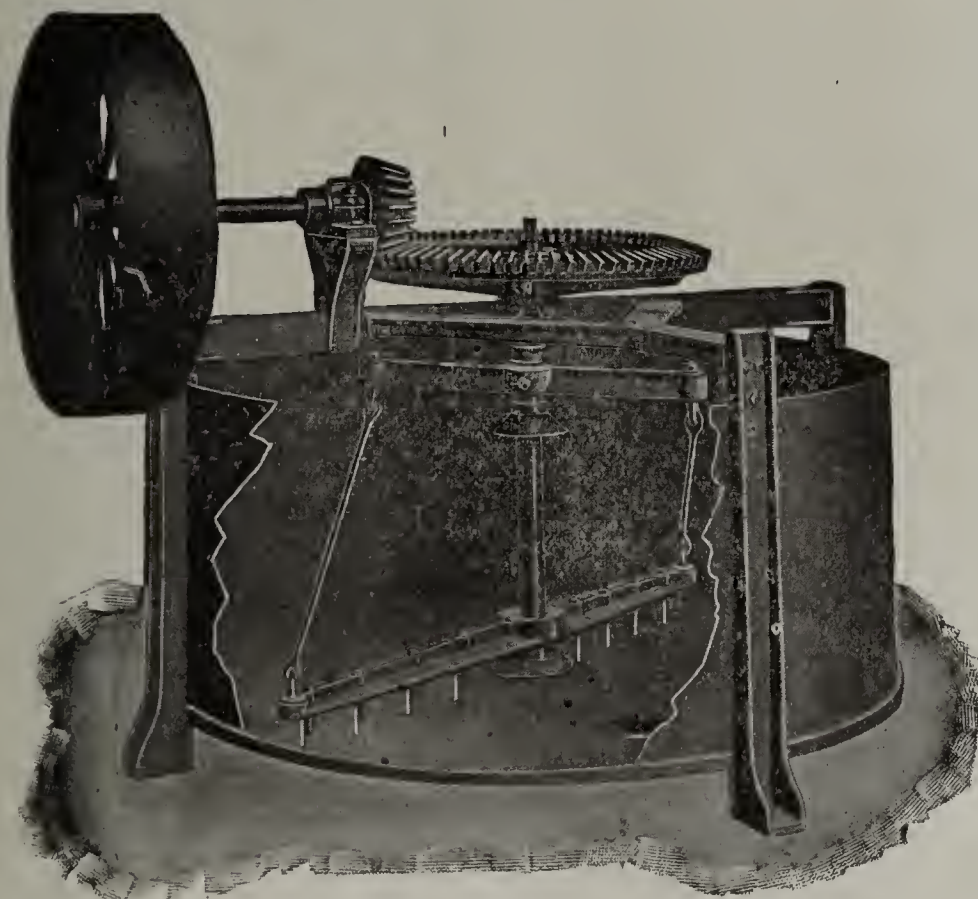
Especially adapted for ornamental designs. Any size brick up to 12 $\frac{5}{8}$ inches long, 10 inches wide and 4 $\frac{1}{4}$ inches thick. Brick set into kiln direct from press.



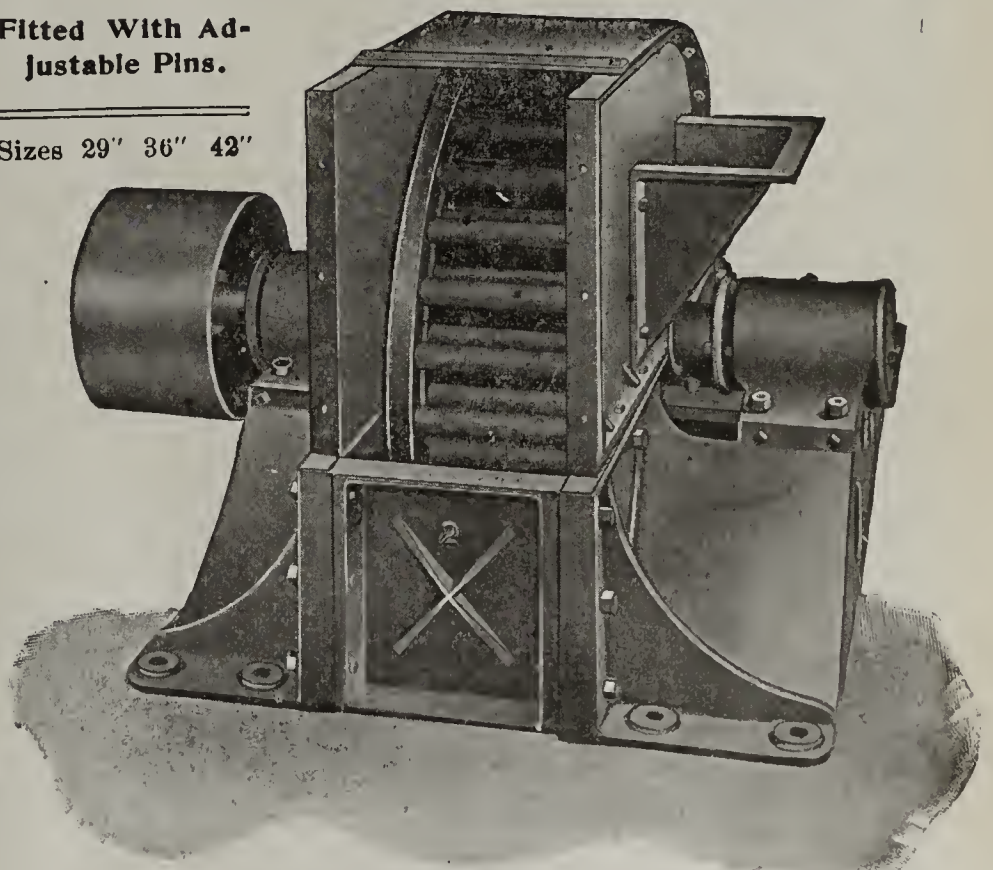
GRATH PATENT HAND POWER PRESS.

Fitted With Adjustable Pins.

Sizes 29" 36" 42"



A GOOD MIXER IS ALWAYS APPRECIATED.



THE FERNHOLTZ CLAY PULVERIZER.

The Fernholtz Brick Machinery Co.

Cable Address "Fernbrick." Western Union Code.

Boyle Avenue and Old Manchester Road, ST. LOUIS, MO., U. S. A.

DRY PRESS BRICK MACHINES

RELIANCE DRY PRESS THE MACHINE OF THE FUTURE



OLD STYLE TOGGLE MOVEMENTS SUPERCEDED BY NEW
—AND BETTER PRINCIPLES—

THE ONLY MACHINE not using the Toggle Movement.

THE ONLY MACHINE applying Pressure from the Bottom.

THE ONLY MACHINE making a Uniformly Pressed Brick.

THE ONLY MACHINE MAKING BRICK WITHOUT GRANULATED CENTERS.

Every Brick is a Face Brick. 4 Mold Press 20000 per day. 6 Mold Press 30000 per day. Adjustment permits any pressure desired (A Feature peculiar to the *Reliance*.) Cheapest because having fewest parts. (Also cheapest to keep in repair.)

S I M P L E
S T R O N G
E F F I C I E N T

WRITE TO-DAY FOR PARTICULARS.

SEND US A SAMPLE OF YOUR CLAY.

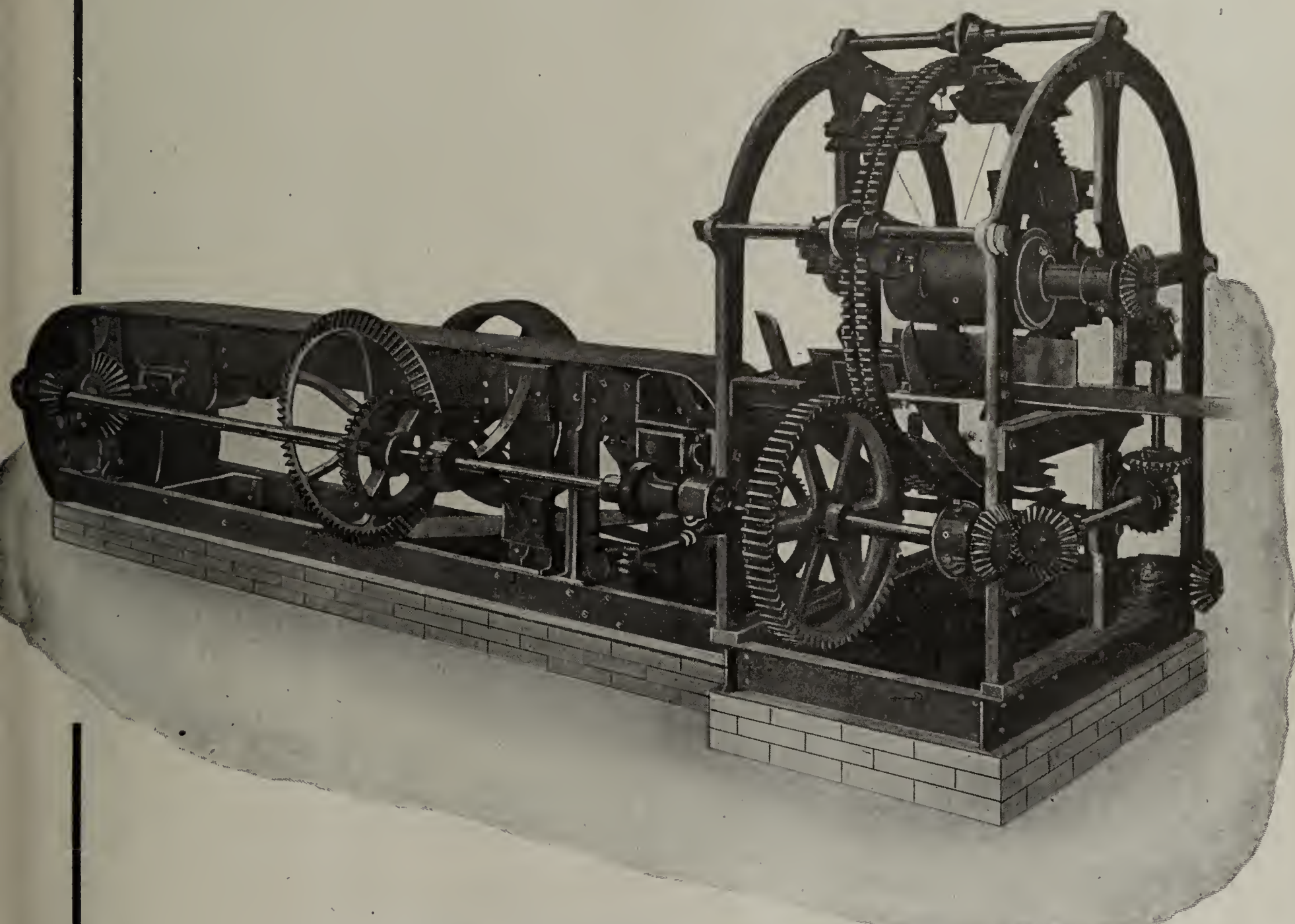
ADDRESS

THE RELIANCE MACHINE AND TOOL WORKS
ST. LOUIS, MO.

ARE YOU INTERESTED IN A CUTTER THAT WILL DOUBLE YOUR PROFITS FOR 1907?

The Hix "Happy Thought" Automatic Cutter will do it. This Cutter is without an equal as it does what others can not do. Will cut end or side cut brick, hollow blocks or conduits any length or size desired. The capacity is unlimited. No clay wasted, every brick a perfect one, no complicated machinery to get out of order and give annoyance.

It Will Pay You to Write Us for Particulars

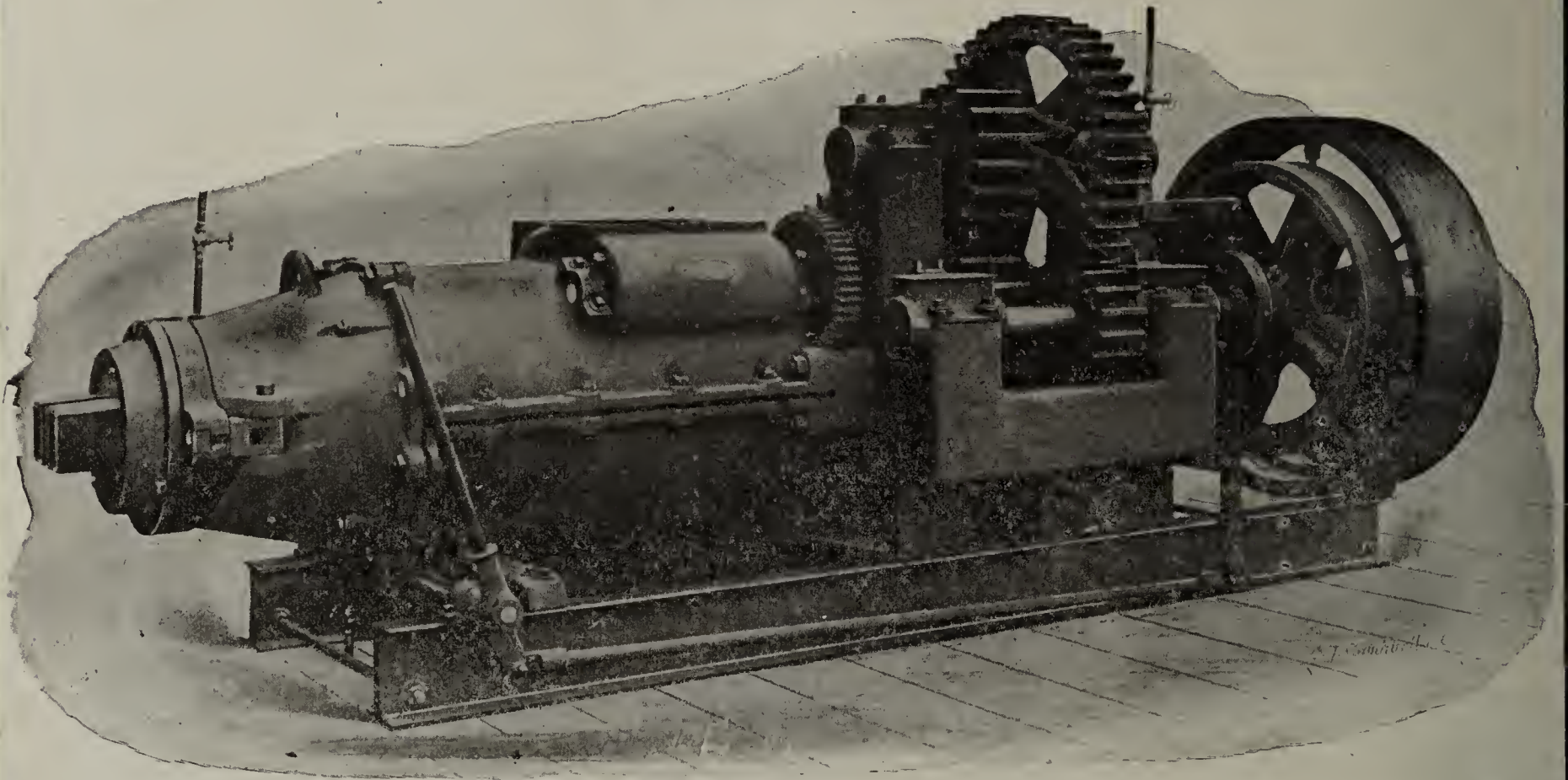


THE HIX "HAPPY THOUGHT" AUTOMATIC SIDE CUT BRICK CUTTER.

The Wallace Manufacturing Company
FRANKFORT, IND., U. S. A.

Horizontal Brick Machines

The Brewer Patterns are new and they are right down to the very minute of modern ideas. They are built by people who know how and the weight, strength or quality or material has not been skimped to make the price low.



A Line of Three Sizes

Ranging in capacity from 20 to 50 thousand with a good wide margin of safety.

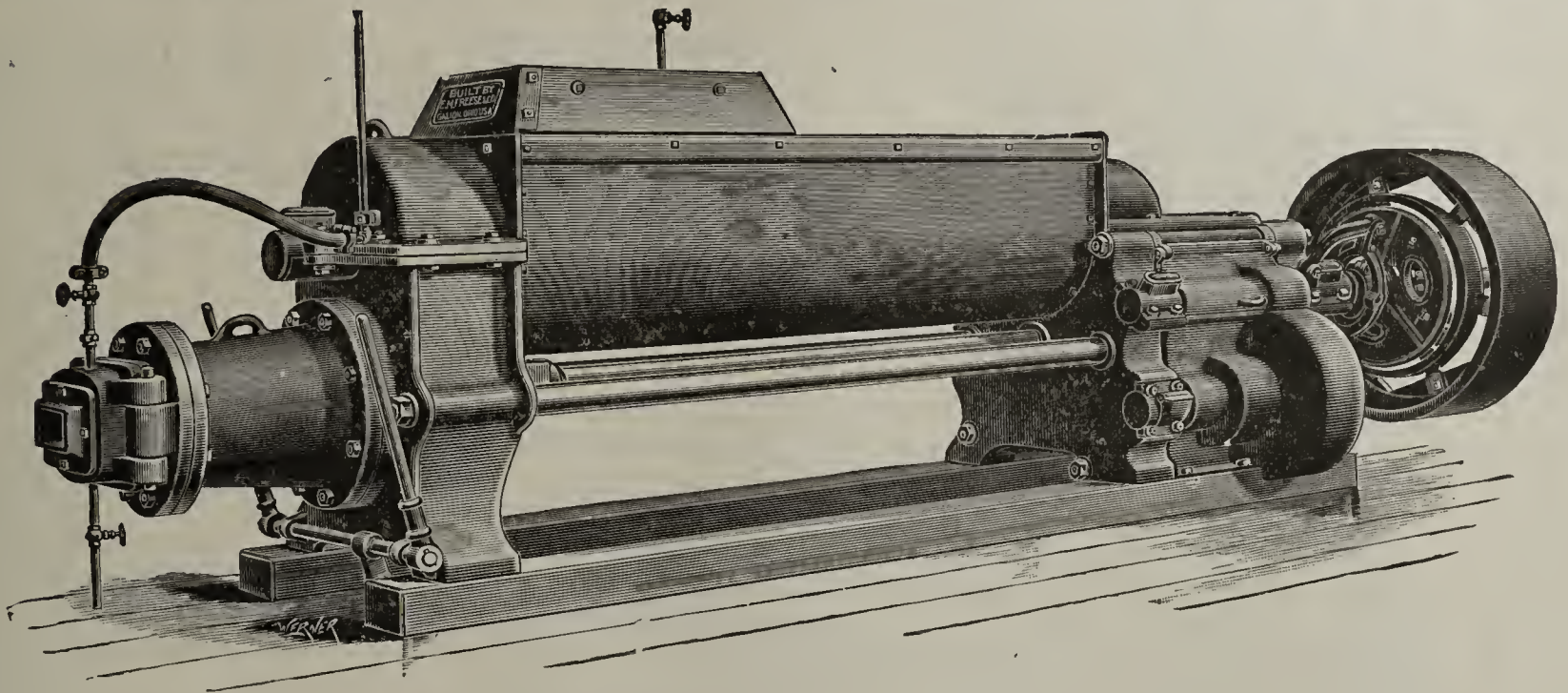
Gear-frames cast in one piece. Knives forged from hard, high carbon steel; each one independently adjustable for pitch. Back-thrusts self-oiling, self-aligning, independent and adjustable. Screws and liners, white iron.

They are Good Machines

AND IT WILL PAY YOU TO LOOK THEM UP.

H. BREWER & CO. ***TECUMSEH MICHIGAN***

UNION BRICK MACHINES



We build these Machines in five sizes. Capacities to 10,000 brick per hour.

Several hundred are in everyday use. They do first-class work and are convenient, economical and durable. This can be verified by investigation.

We also build Brick Machines with separate Pug Mill.

Don't forget our Automatic Cutters. They give satisfaction.

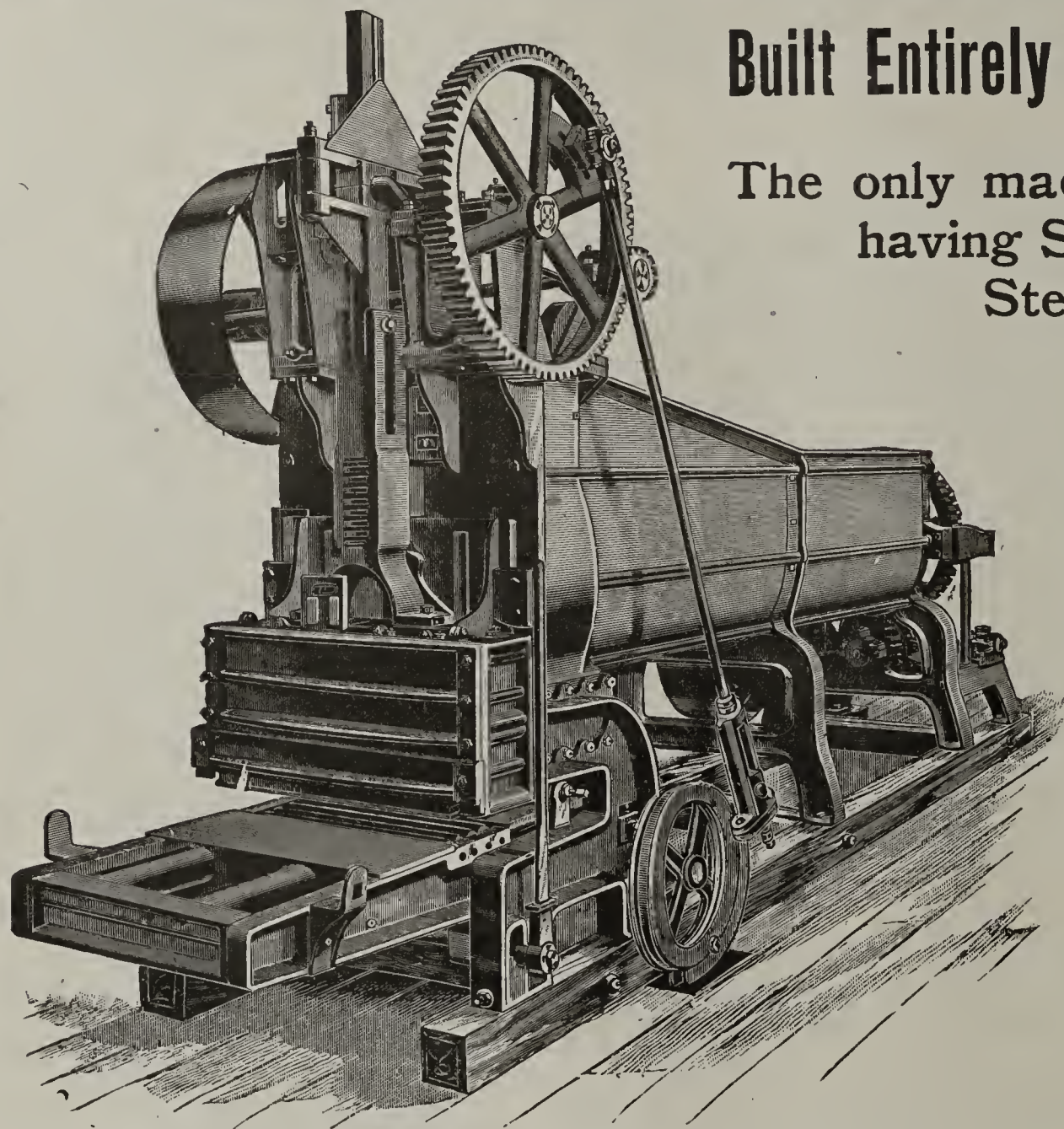
State your requirements and let us furnish particulars.

E. M. FREESE & CO.
GALION - - - - - OHIO

THE POTTS HORIZONTAL BRICK MACHINE

Built Entirely of Iron and Steel.

The only machine of this class
having Steel Gear and
Steel Shaft.

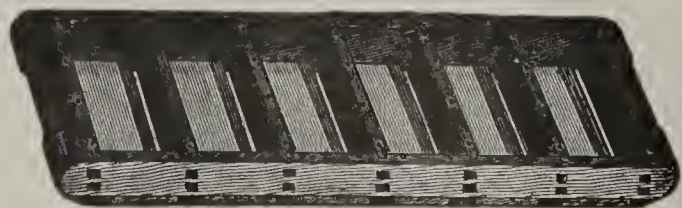


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Built of the Best
Material by the Best
Workmen.

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Simple, Strong and
Durable.
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No extra pug mill required to enable working the clay direct from the bank. Its great strength enables working the clay as stiff as practicable, insuring brick which will be
STRAIGHT and SQUARE.

THE LEADER OF ALL SAND MOULD MACHINES.



**BRICK MOULDS A SPECIALTY
QUALITY IS OUR AIM.**

We manufacture a complete line of Brick Yard Supplies. Write for prices.

C. & A. POTTS & CO., Indianapolis, Ind.

BRICK DRYERS

The largest and best. The drying done upon an entirely new principle. Brick made today. Set in Kiln tomorrow. Thoroughly dry. Will dry the most tender clay with no loss from cracking. It has **No cars**.

No transfer cars

No rail

No ties

No fans

No extra engine

No high or expensive stack

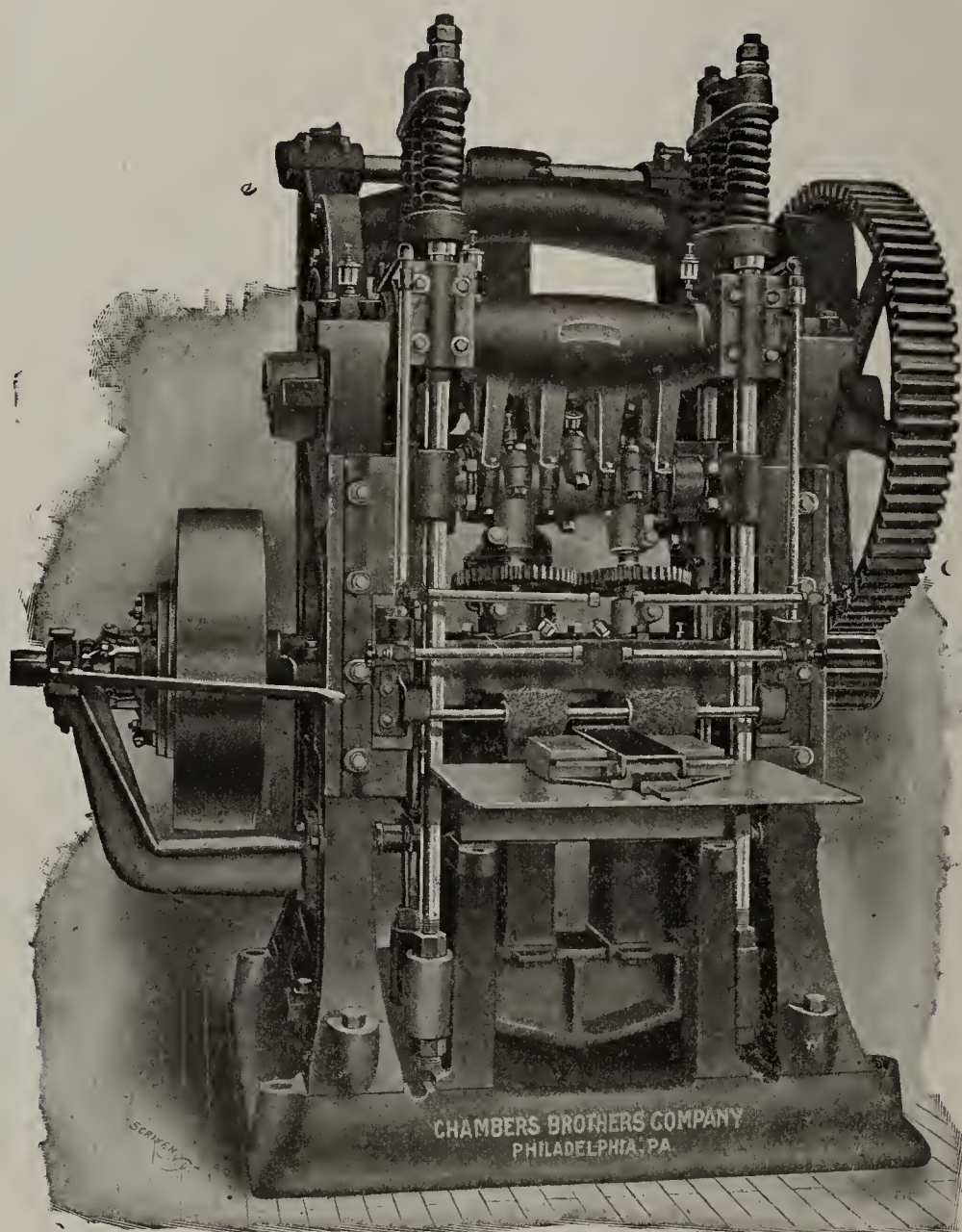
The best dryer on the market. Manufactured by

C. & A. POTTS & CO.

INDIANAPOLIS, IND.

MACHINERY FOR BUILDING BRICK AND FOR STREET PAVERS

Weight
 about
 11,000 pounds
 Capacity
 2,000 bricks
 per hour.



Single Crank
 Movement
 Working
 Machinery
 all above the
 Mold Box.

THE PHILADELPHIA REPRESS.

Automatic End Cut Brick Machines of five sizes, having capacity
 from 10,000 to over 100,00 brick daily under
 favorable conditions.

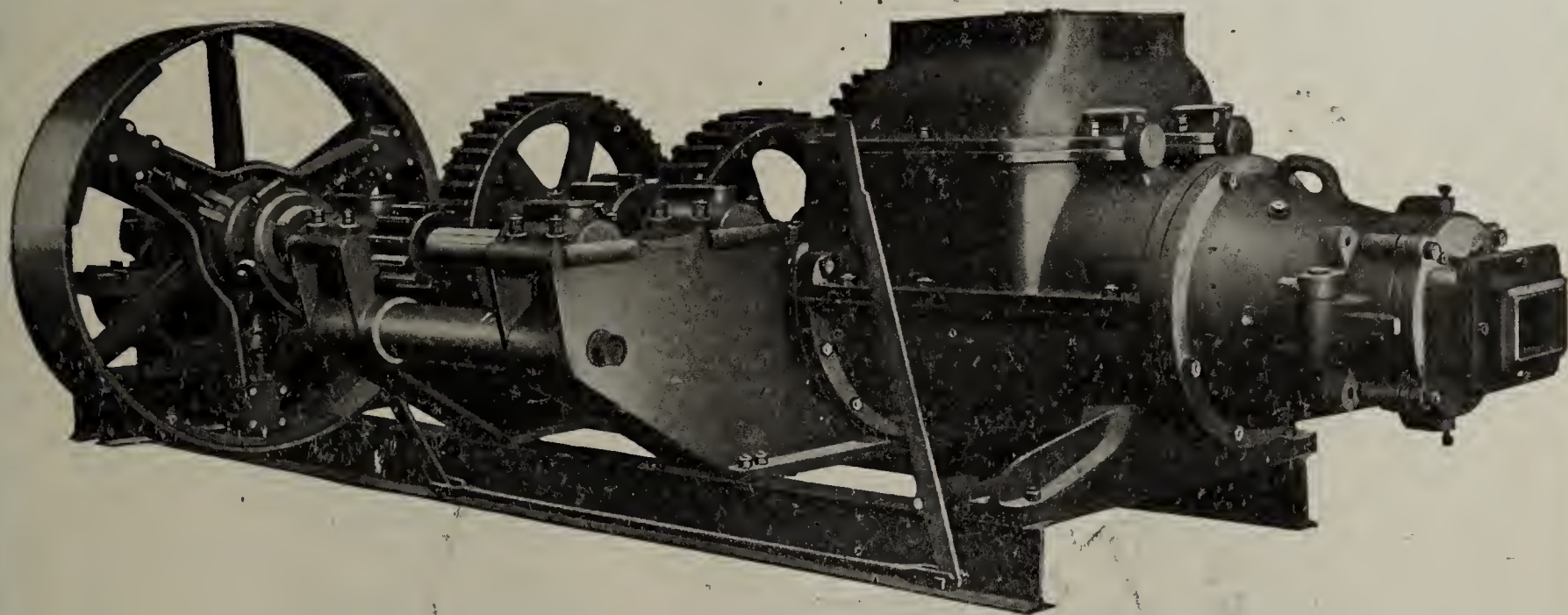
CHAMBERS BROTHERS COMPANY

52D AND MEDIA STREETS

E. R. FRAZIER, Chicago Agent,
 59 West Jackson Boulevard.

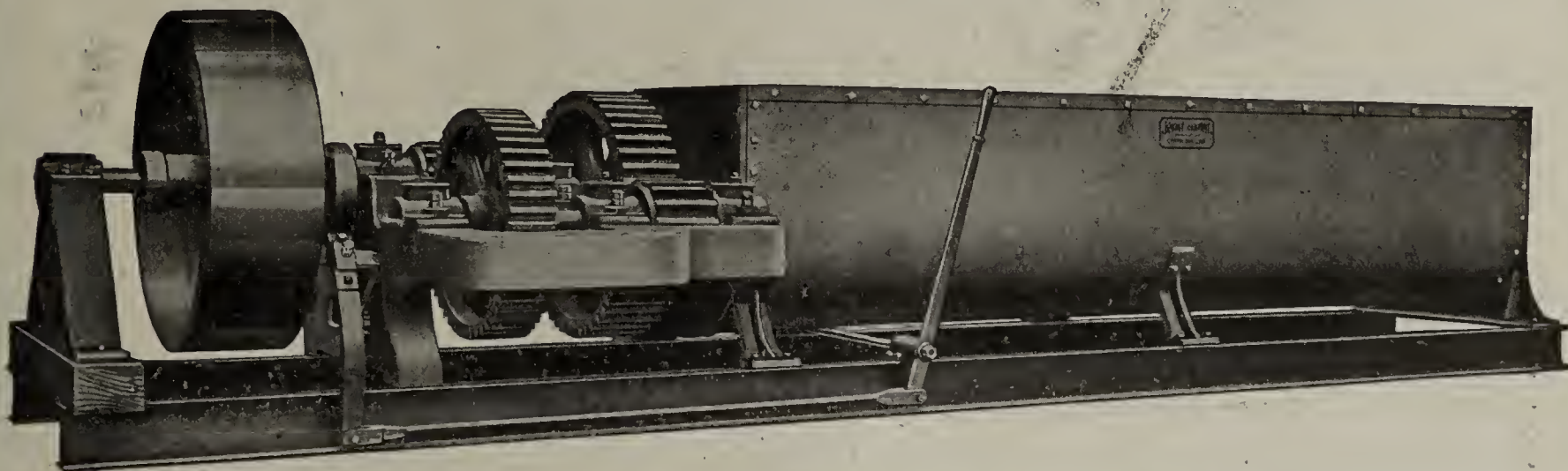
PHILADELPHIA, PA.

Modern Brick Machinery



NO. 9 AUGER BRICK MACHINE

Capacity 50,000 to 70,000. The Machine for Difficult Clays. Heavy Shafts - Steel Gears - Accessibility



12 Ft DOUBLE GEARED PUG MILL TYPE "C"

Heavy Shafts and Large Faced Gears

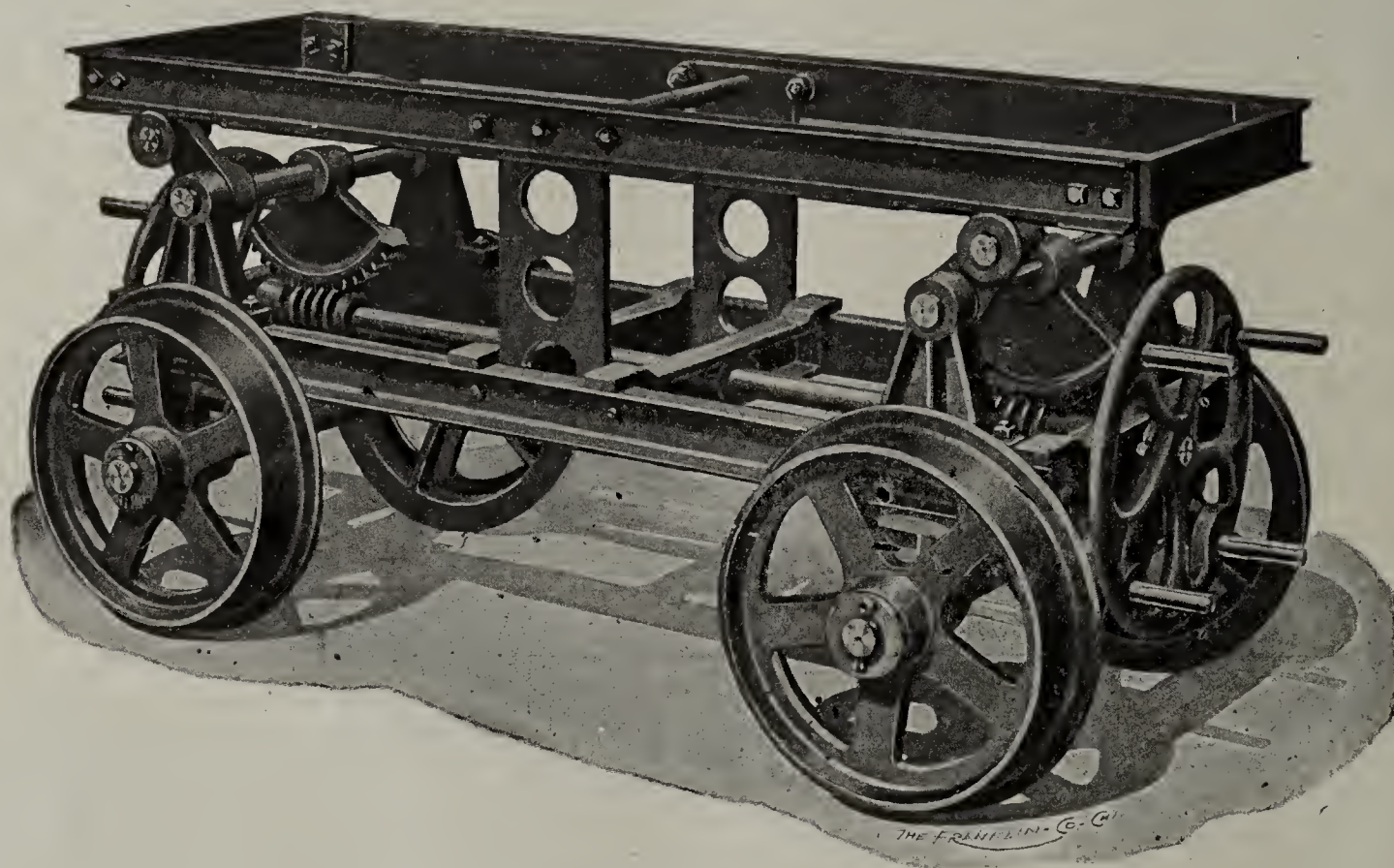
Write for Our new Circular No. 12 describing some new Models of Brick Machinery

The **BONNOT COMPANY**
CANTON, OHIO

THE GUILDER

ELEVATING and LOWERING BRICK CAR

FOR OPEN AIR SYSTEM OF DRYING



Strong and servicable. Easy to handle. Operated from either end. All iron and steel. Raised and lowered by worm gear and segment. The most perfect car of its kind made. We will furnish the **Guilder Elevating and Lowering Car** with the necessary transfer cars and turn table at a reasonable price and send you all the plans for an open air system of drying without additional cost.

Write us in regard to this car and also let us tell you all about the "**PREMIER**" line of Clay-Working Machinery.

The J. D. Fate Company
PLYMOUTH, OHIO



Vol. XXX. No. 6.

CHICAGO, MARCH 30, 1907.

Semi-Monthly, \$1.00 per Year
Single Copies, - 10 Cent.

METHODS AND ESTIMATES OF COST OF HANDLING CLAY AND CLAY MATERIALS*

BY JOS. K. MOORE AND H. R. STRAIGHT, UNIVERSITY OF ILLINOIS, URBANA, ILL.

In the majority of cases the most simple means of handling clay and clay materials is the most effective.

Scrapers have been found to be both the simplest and cheapest means of excavating clay, but this is so only for small plants. In some cases it is absolutely necessary to resort to hand digging, and when this is the case a greater facility in the works is obtained by watching closely the laborer. What is the difference between a poor and a good shoveler? Why is it one man is able to load faster than another? Is it indolence entirely?

The method of work has a great deal to do with it. Some men bend over and use their arms and shoulders in forcing the shovel into the soil. This is a waste of energy which is costing you dollars. Labor is the most expensive factor of production as expressed by curves to be shown later. The correct way to dig is to have the arms free to guide the shovel, and the force used to propel it downward should be the foot, and the handle should be as nearly perpendicular as possible. It is often well to put your good shovelers together and require that their pace be kept, or at least be a goal for which the others must strive. Walking on the ground tramps it, hence the cars and wagons should be brought as close as possible. Require the shovelers to keep the digging floor level; an Irishman is the only laborer who will do this without being watched; as this aids when shifting the tram track it is necessary. The most economical number to shovel into a wagon is three or five, and when shoveling to a tram-car, two are used.

In large plants the steam shovel is employed for excavating. The size of the shovel and its power is regulated by the capacity of the plant and the kind of material to be handled. Large steam shovels of the 95-ton variety handle material at the rate of 200 ton per hour at their best. For

some kind of work as low as 25-ton shovels are used. Where drainage is good and a sufficient water supply is at hand, stripping on a large scale may be carried on by hydraulic means. In this way 1,200 cubic yards of boulder clay has been removed in ten hours by two men using a 1½ inch nozzle and 80 pounds pressure.

The material after being excavated must be carried to the plant for this purpose. The cable tramway has during the past few years come into very general use. This consists of a winding drum, cars and connecting cable.

The winding drum is of the common paper friction type, with a reduction of six or eight between the friction and castiron wheel against which it works, thus giving a good arrangement easily controlled by which the load may be accelerated without extreme stresses in the belt or any of the parts of the drum. The cable required for such haulage may vary from ¾ to ¾ inch, depending upon the grade, number of cars and their capacity. They are made of six strands, seven wires to the strand, with hempen centers.* The kind of cars used depend a great deal upon the method of loading. When this is to be done by hand, they should be designed as low as good practice would allow; while on the other hand if a steam shovel is employed an advantage is gained by the use of a higher car, from the fact that the distance through which the shovel arm must travel is less. In loading from a bridge both kinds of cars are often seen. The cars used for steam shovel loading is by necessity side or end dump, because of the difficulty of making the mechanism of a bottom dump car sufficiently strong to withstand the shock due to the quantity of the falling load from the dipper. The cars employed where hand loading is resorted to should be side dump, also, as the men are required to elevate the material a shorter distance. End dump cars mentioned above are seldom used except when the construction of the plant demands it, and these are to be avoided if possible as they are very poorly balanced. The capacity of said cars vary from 1½ to 3 yds., depending upon the size of plant.

Where hauls are long three other methods are resorted to. These are the use of wagons, the dinkey locomotive.

* Paper presented to the Illinois Clay Workers Association, at Champaign Ill., June 22-24, 1907. The first part presented by Jos. K. Moore, balance by H. R. Straight.

and the aerial tramway. The first are used in smaller plants where the cost of installation and operation of more elaborate methods can be ill afforded; the second is usually operated in conjunction with the tramway, thus increasing the capacity of the tracks; the third being used where the country is rough and grading expensive.

In the plant proper the conveying is best carried on by means of the belt conveyors where the direction is horizontal, and cup elevators where the direction is vertical. However, we know of the elevation of material by means of smooth belt conveyors at an angle of 25 degrees having been carried on successfully.

The green and dry products are best handled on flat belt conveyors, such as the Scott system or others. The practice of loading and unloading the kiln by means of conveyors is both practical and economical. Where the plant is compact the conveyor can carry the burned ware to their respective stacks, the sorting being done in transit. For handling finished products and distributing the brick from yard to car or wagon the Barney conveyor system is especially adapted. This consists of an endless chain along which are suspended hooks that hold five bricks each, and are built in such a form that the bricks are readily grasped by the unloader. If dry material is to be conveyed, for example, from bins where cars are dumped, to various bins connecting with the dry pans, a belt conveyor can be used and the material taken from the belt at any point by a self-propelling tripper. This apparatus is manufactured by Stephens-Adamson Co., of Aurora, Ill., and is especially suited to plants where the material is shipped in by railroad. Having discussed the methods in use let us now try to answer the question, When does it pay to install labor-saving devices in handling clay and clay products?

The possibility of eliminating hand labor increases proportionally with the capacity and output of a plant. In plants of small capacity for example, the winning of the clay is most economically accomplished in some instances by pick or shovel and wheelbarrows, and as the capacity increases the method of winning may pass in succession from the wheelbarrow scraper, clay gatherer and finally to the steam shovel. Local conditions such as quantity and character of stripping, vertical variation in the quality of the clay, kind and mode of occurrence of detrimental material, such as nigger heads, sulphur balls, the difference in level of factory and floor of clay pit, etc., etc., influence greatly the adoption of methods of winning, whether the plant has small or large capacity; but the fact remains that the smaller the capacity of the plant, the more dependent must the operators be on hand labor to gather and deliver clay to the machines. What is true in case of winning of clay is true throughout the whole process, even to loading the finished product.

Practically, the only considerations, aside from those of local conditions that limits the use of labor-saving devices to the plants of comparatively large capacity are those of interest on capital invested in a particular device, its cost of maintenance, and amount of depreciation compared with the wages that would have to be paid for the execution of the same kind and amount of service. As a matter

of fact, similar considerations affect the adoption of small as against large kilns, steam heat dryers as against waste heat dryers, installation of a car system as against the old-time track and barrow methods, etc.

After having given some time to the study of efficiency of clay working machinery and appliances, both from practical observation in a large number of clay working plants of varying capacities, and of published data concerning the cost of installation, repair and estimated depreciation and efficiency of similar devices in other industries the writers have developed a scheme by which, it is believed, the question of economy effected by the installation of any labor-saving device can be readily determined.

We have based our calculation on the average working capacity and wages of the class of laborers that would be supplanted in each case. In this it is realized that we are using as a basis of our calculations a factor that varies greatly, according to the skill of the laborer and the ability of the foreman. The watching of the diggers, as we have before cited, is evidence of this.

These items concerning the relative efficiency of hand laborers have been a subject of study and calculation by railroad engineers. Having had opportunity to study the subject of pick and shovel laborers on railroad construction where every item affecting efficiency of hand labor is considered, we feel that we have used as a basis of calculation figures that represent the average wage and working capacity of a common laborer. Where more skilled labor is effected by the installation of mechanical devices, merely wages have been taken into consideration.

The estimate of cost for the installment of some of these different labor-saving devices and of handling material with the same we have attempted to show by curves, which Mr. Straight will now explain, and should they prove as interesting to you as they have been instructive to us during their preparation, I am sure the time taken to prepare them shall have been well spent.

The following details show the conditions encountered in Curves 1 to 6 on curve sheet, No. 1.

Curve No. 1. (5% interest, 5% depreciation.)

Rails, spikes, flanges.

Engines.

Winding Drums.

Curve No. 2. (5% interest, 10% depreciation.)

Boilers.

Outside clay cars (no heavy shocks).

Dinkey locomotive and steam shovel in clay.

Crushing machinery.

Ties.

Curve No. 3. (5% interest, 15% depreciation.)

Transmission belts, protected also in No. 2 class.

Curve No. 4. (5% interest, 20% depreciation.)

Outside clay cars, heavy service.

Steam shovels in shale.

Conveyor belts.

Kiln brick conveyor.

Elevators.

Transmission belts (not protected).

Clay gatherers.

Curve No. 5. (5% interest, 25% depreciation.)

Plows and scrapers.

Curve No. 6. (5% interest, 100% depreciation.)

Cables.

EXAMPLE OF USE OF INVESTMENT CURVES.

(See curve sheet No. I.)

A man is using teams and wagons for hauling his clay from pit to crusher. He uses 200 tons per day, and it cost him the pay of the equivalent of ten men, at \$2.00 to handle it.

He uses a steam shovel at \$4.00 which being included in curve No. 2, must displace one man.

He uses 1,000 ft. of track at 50c per ft., which is fully covered by case in curve No. 2 and must displace 1/5 man.

He uses eight cars at \$150 as in curve No. 2 and must displace 3/10 man.

He uses 1,000 ft. 1/2-inch cable at 7 1/2c as in curve No. 6, and must displace 5/10 man.

He uses a winding drum as in curve No. 1 at \$200, and it must displace 1/100 man.

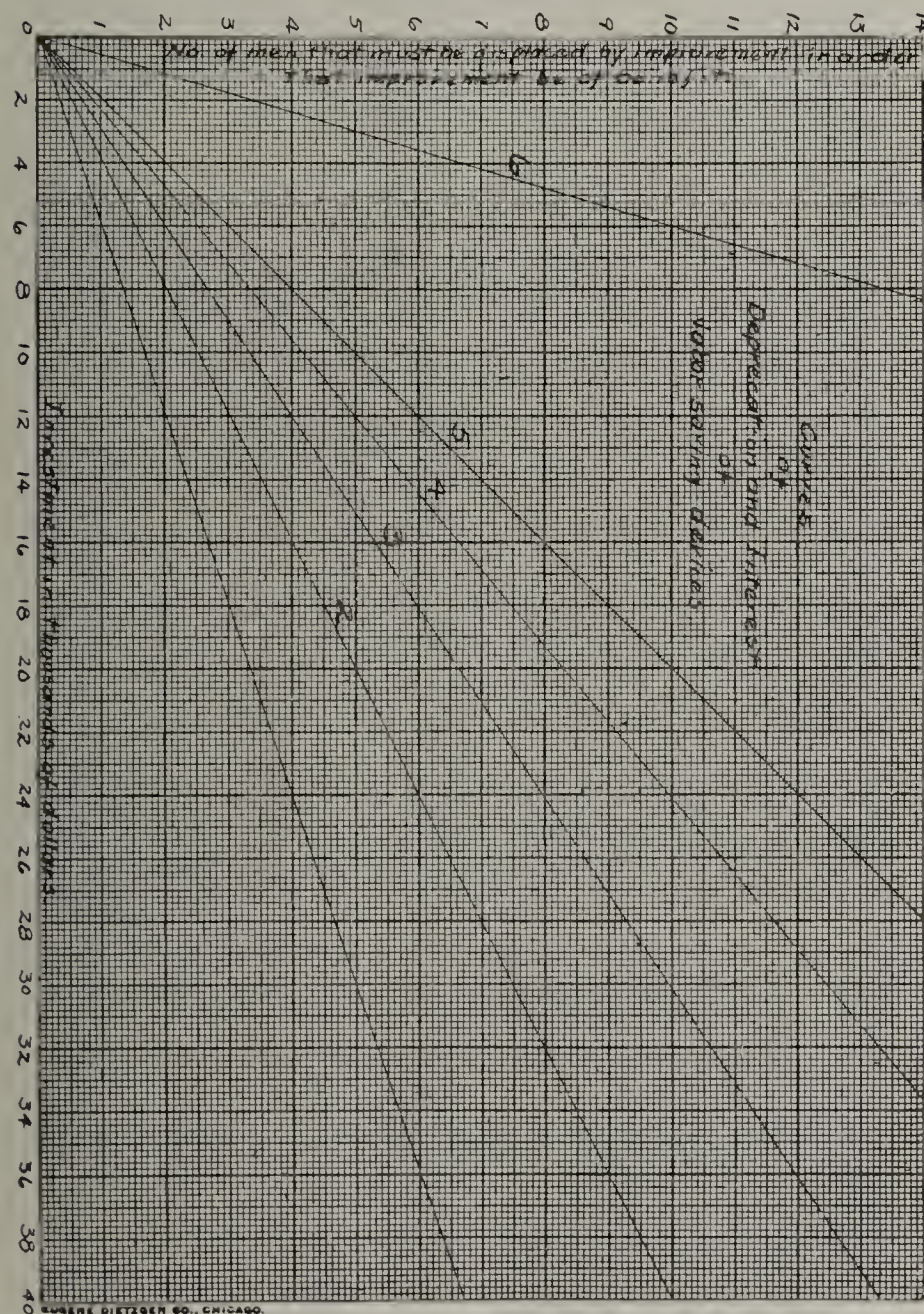
He uses power to the approximate extent of 1/2 man's wages. (For winding drum.)

Total men to be displaced=3.

Total men to run shovel and cars and other machines need not be over 5 with an average wage of \$2.00 for so small a shovel therefore he has saved the wages of (10-3)—5=2 men.

Note.—Man's labor is rated at \$2.00 in curve sheet.

Working days of year taken s 300.



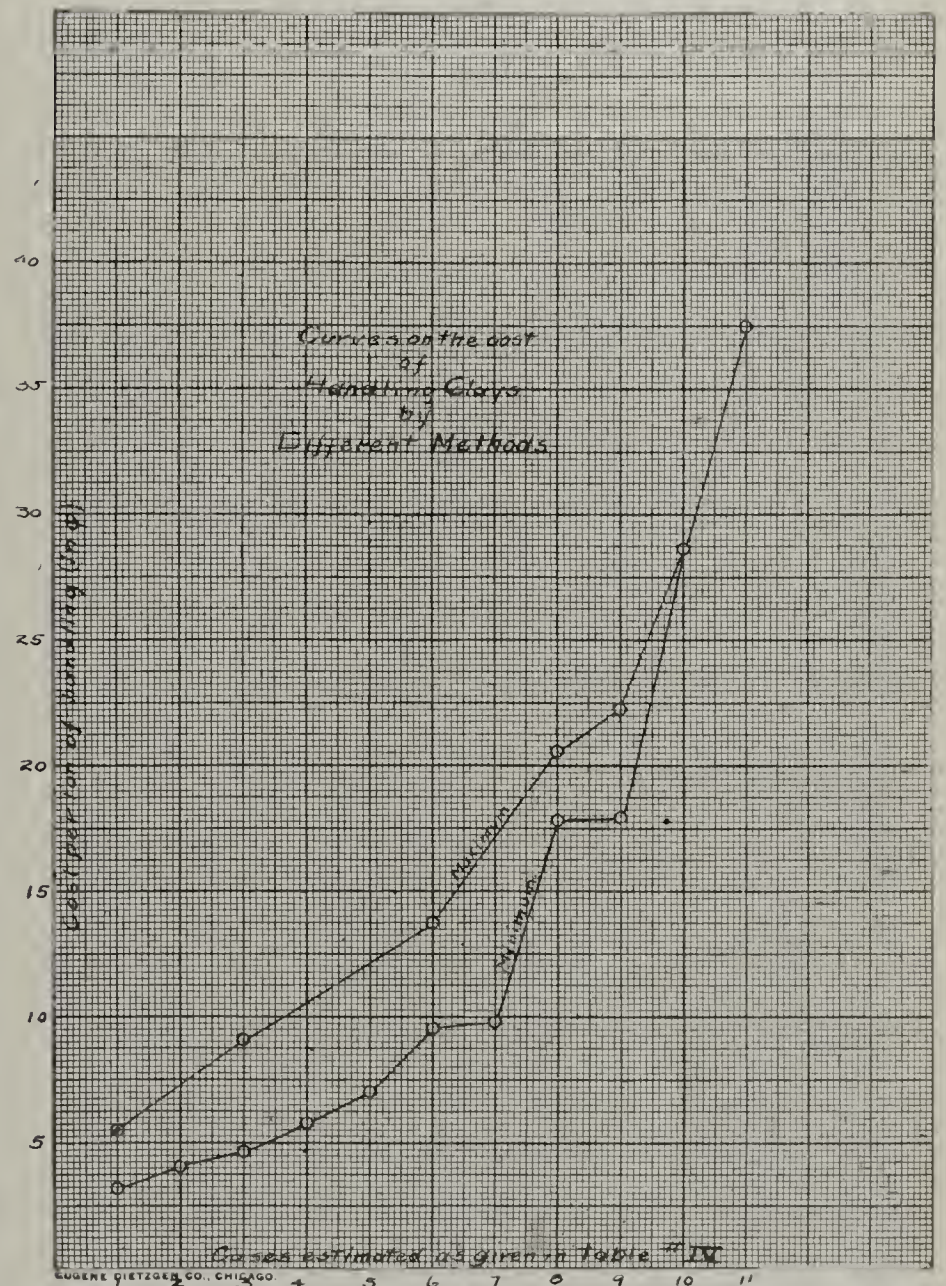
CURVES OF DEPRECIATION AND INTEREST OF LABOR SAVING DEVICES. CURVE SHEET No. I

TABLE SHOWING APPROXIMATE COST PER TON OF HANDLING CLAYS BY DIFFERENT METHODS ON MEDIUM SIZE PLANTS.

Case. (See curve sheet No. II.)

1. 35-ton steam shovel handling clay.
Capacities, etc., as in table No. 2, cost per ton—3.23 to 5.51 cents.

2. 1 team scraping into car bridge with wheel scraper in loose material. Team at \$3.50 per day.
Car man at \$2.00 per day.
Drum boy at \$1.50 per day.
Cost of 10 h. p. used on drum at \$35.00 per h. p. per year=\$1.16.
Capacity 200 tons per day, cost per ton \$4.08.
3. 25-ton steam shovel handling clay.
Capacities, etc., as in table No. 2, cost per ton 4.54 to 8.14 cents.
4. 2 teams with slip scraper scraping into car bridge.
Teams at \$3.50 per day.
Car man at \$2.00 per day.
Drum boy at \$1.50 per day.
Capacity 200 tons, cost per ton 5.83 cents.
Cost of h. p. used on drum same as above, \$1.16.

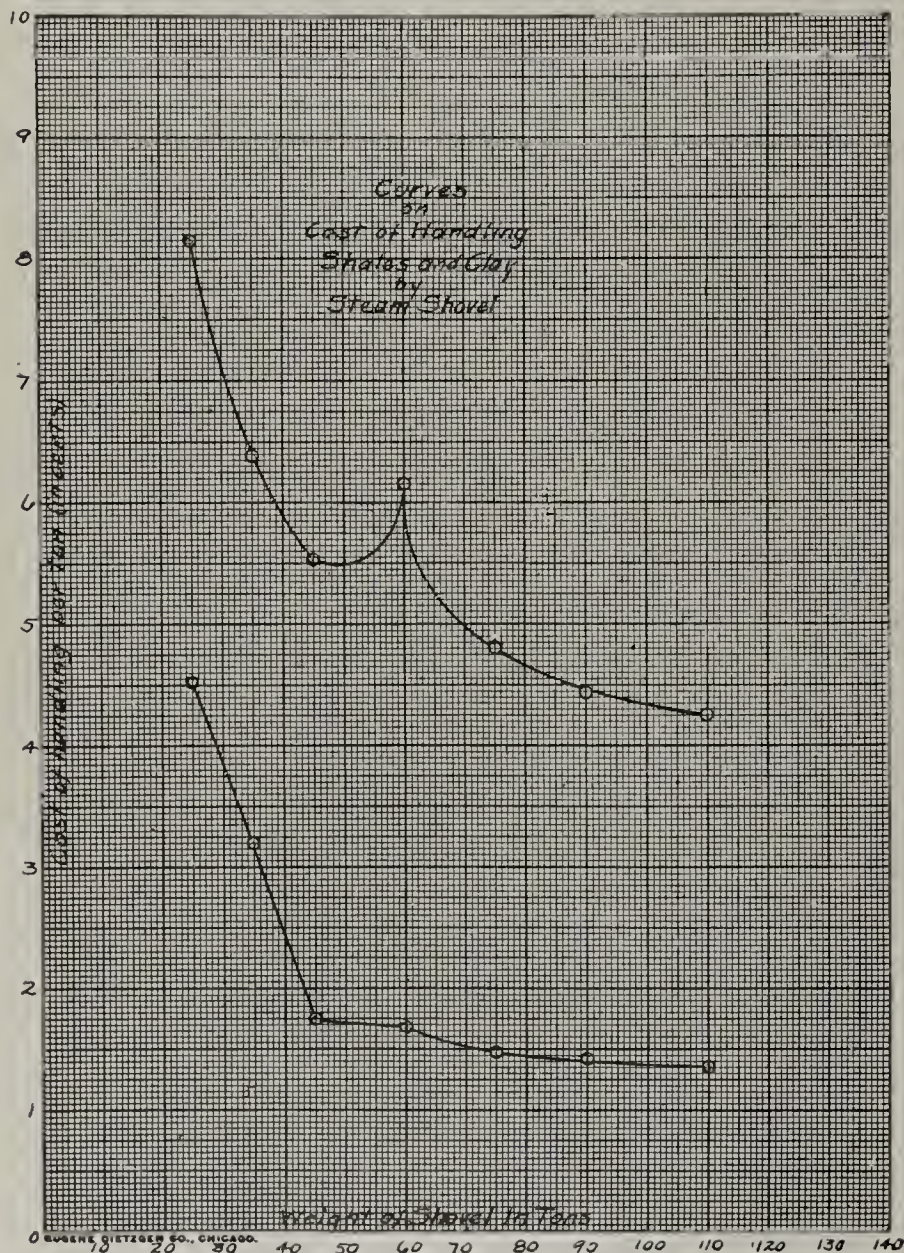


CURVES ON THE COST OF HANDLING CLAYS BY DIFFERENT METHODS CURVE SHEET No. II

5. 1 team scraping into wagon loading inside bridge with wheel scraper.
2 teams hauling 1,000 to 2,000 ft. with wagon.
3 teams at \$3.50 per day.
1 bridge man at \$2.00 per day.
Plowing and bunching \$1.75.
Capacity 200 tons per day. Cost per ton 7.1 cents.
6. 25-ton shovel loading into wagons.
5 to 7 teams at \$3.50 per day.
Other expenses practically the same.
Capacity 225 tons. Cost per ton 9.6 to 13.75 cents.
7. 2 teams scraping into wagon loading bridge with slip scrapers. 2 teams hauling.
1 bridge man at \$2.00.
1 slip man at \$2.00.
Plowing, \$1.75.
Capacity 200 tons. Cost per ton, 9.87 cents.

- 8. 5 men shoveling in plowed material.
3 to 4 teams at \$3.50 per day. Haul 1,000 to 2,000 ft.
5 men at \$2.00 per day.
Plowing, \$1.75.
Capacity 125 tons. Cost per ton, 17.8 to 20.6 cents.
- 9. 3 men shoveling in plowed material.
2 to 3 teams at \$3.50 per day. Haul 1,000 to 2,000 ft.
3 men at \$2.00 per day.
Plowing, \$1.75.
Capacity 80 tons. Cost per ton, 17.8 to 22.2 cents.
- 10. 4 men spading into 2 cars and picking material.
1 car man at \$2.00
4 spaders at \$2.00.
Drum boy at \$1.50.
Capacity 40 tons. Cost per ton, 28.7 cents.
- 11. 4 men picking and loading into 2 wagons.
2 teams at \$3.50.
4 men at \$2.00.
Capacity 40 tons. Cost per ton, 37.5 cents.

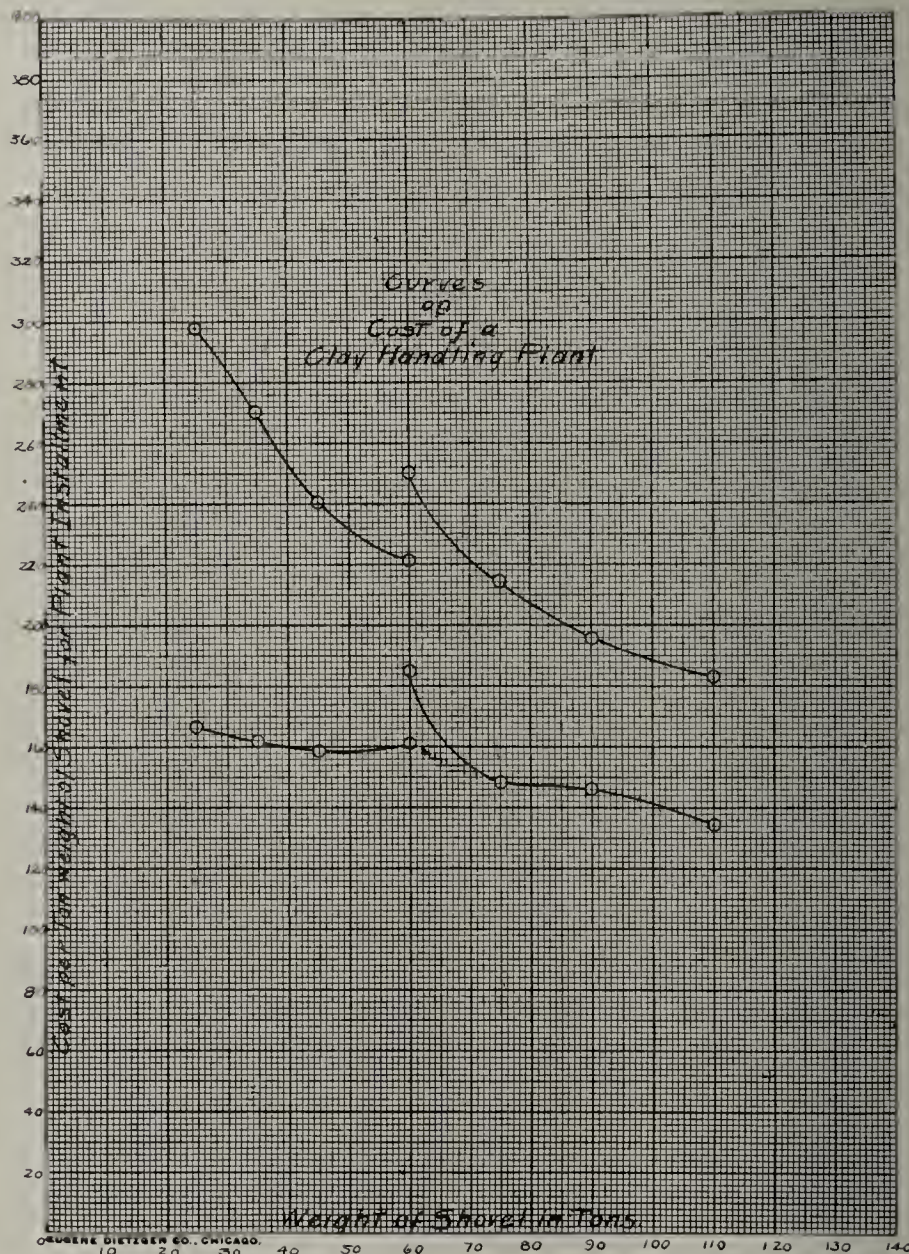
Notes on above data.—Depreciation of wages, cars, cables and tracks not figured in the above. Slip scrapers, capacity estimated at 1/3 ton or 1/5 yard. Wheelers at twice capacity of slips.



CURVES ON COST OF HANDLING SHALES AND CLAYS BY STEAM SHOVEL. CURVE SHEET No. III
COST OF HANDLING CLAY OR SOFT SHALE WITH A 25-TON STEAM SHOVEL AND CABLE HAULAGE.
(See curve sheet No. III.)

Item.	Machines and materials used.	Per day of 10 hours.	
		Min.	Max.
1	Interest on shovel investment \$3,500 to \$5,000	.46	.67
2	Cost of coal for shovel at \$1.40 per ton, 1/2 to 1 ton	.70	1.40
3	Oil, repairs, etc.	.15	.30
4	Labor at \$2.00 per day, 4 to 6 men.....	8.00	12.00

5	Interest on 4 to 8 cars at \$125 each....	.06	.12
6	Interest on track, 800 to 2,000 ft.....	.04	.10
7	Depreciation of ties at life of 8 years..	.08	.21
8	Depreciation of rails, spikes, etc. (practically nothing).....		
9	Interest on 900 to 2,100 ft. 1/2 inch cable at 7 1/2c per ft.....	.01	.02
10	Depreciation of cable at life of 600 days	.11	.26
11	Interest on hoisting drum (practically nothing)		
12	Depreciation of hoisting drum, oil, etc..	.02	.04
13	Cost of power for drum at \$35.00 per h. p. per year, 5 to 10 h. p. used.....	.58	1.16
Total		10.21	16.28



CURVES ON COST OF A CLAY HANDLING PLANT. CURVE SHEET No. IV
Min. cost per ton with probable max. output of 225 tons
10.25
-----=4.54 cents.
225
Max. cost per ton with probable min. output of 200 tons
16.28
-----=8.14 cents.
200
COST OF HANDLING CLAY OR SOFT SHALE WITH A 35-TON STEAM SHOVEL AND CABLE HAULAGE.

Item.	Machines and materials used.	Per day of 10 hours.	
		Min.	Max.
1	Interest on shovel. Investment \$5,500 to \$7,000	.73	.93
1-13	Items from 1 through 13 practically the same as above	9.75	15.61
Total		10.48	16.54

Min. cost per ton with probable max. output of 325 tons
10.48
=——=3.23 cents.

325
Max. cost per ton with probable min. output of 260 tons
16.54
=——=6.37 cents.

260
COST OF HANDLING CLAY OR SOFT SHALE WITH A 45-TON
STEAM SHOVEL AND CABLE HAULAGE.

Item.	Machines and material used	Per day of 10 hours.	
		Min.	Max.
1	Interest on shovel investment \$6,000 to \$7,500	.80	1.00
1-13	Item from 1 through 13 practically the same as above	9.75	15.61
	Total	10.55	16.61

Min. cost per ton with probable max. output of 600 tons
10.55
=——=1.75 cents.

600
Max. cost per ton with probable min. output of 300 tons
16.61
=——=5.53 cents.

300
COST OF HANDLING HARD SHALE WITH A 60-TON STEAM
SHOVEL AND CABLE HAULAGE.

Item.	Machines and materials used.	Per day of 10 hours.	
		Min.	Max.
1	Interest on shovel. Investment \$8,000 to \$9,000	1.06	1.20
2	Cost of coal, 1 to 2½ tons at \$1.40 per ton	1.40	3.50
3	Oil, repairs, etc.	.25	.50
4	Labor. 6 to 8 men at \$2.00 per day.....	12.00	16.00
5	Interest on 8 to 12 cars, at \$150 each..	.16	.24
6	Interest on tracks of 800 to 2,000 feet of same construction as in 25-ton case..	.04	.10
7	Depreciation of ties at life of 8 years..	.08	.21
8	Depreciation of rails, practically nothing		
9	Interest on 900 to 2,100 ft. ¾ inch cable, at 16 cents per foot.....	.02	.05
10	Depreciation of cable at life of 300 days	.50	1.10
11	Interest on hoisting drum, at \$2.00.....		
12	Depreciation of hoisting drum, oil, etc...	.03	.05
13	Cost of power in hoisting 10 to 15 horse power, at \$35.00 per h. p. per year....	1.16	1.74
	Total	16.70	24.69

Min. cost per ton with probable max. output of 1,000 tons
16.70
=——=1.57 cents.

1000
Max. cost per ton with probable min. output of 400 tons
24.69
=——=6.14 cents.

400
COST OF HANDLING HARD SHALE WITH 60-TON STEAM
SHOVEL AND DINKEY LOCOMOTIVE WITH CABLE
HAULAGE ON INCLINE.

Item.	Machines and material used	Per day of 10 hours.	
		Min.	Max.
1-5	Items from 1 through 5 inclusive practically the same as in 60 ton case above	\$14.87	\$21.44

6	Interest on tracks using 35 pound rails instead of 25 pound as above for cable haulage only	.06	.16
7-8	Items 7 and 8 practically same as above 60 ton case.....	.08	.21
9	Interest on ¾ inch cable, at 16 cents per ft., 200 to 300 ft.....		
10	Depreciation of cable at life of 300 days	.12	.18
11-12	Items 11 and 12 practically same as above 60 tons case.....	.03	.05
13	Cost of power in hoisting, at \$35.00 per h. p., 5 to 10 h. p. used.....	.58	1.16
14	Interest on locomotive, investment \$1,200	.16	.16
15	Engineer on locomotive, at \$2.25 per day	2.25	2.25
16	Coal used in locomotive, ½-ton, at \$1.40	.70	.70
17	Repairs, oil, etc., on locomotive.....	.10	.25
	Total	\$18.95	\$26.56

Min. cost per ton with probable max. output of 1,100 tons
18.95
=——=1.70 cents.

1100
Max. cost per ton with probable min. output of 430 tons
26.56
=——=6.18 cents.

430
COST OF HANDLING HARD SHALE WITH 75-TON STEAM
SHOVEL AND DINKEY LOCOMOTIVE WITH CABLE
HAULAGE ON INCLINE.

Item.	Machines and materials used	Per day of 10 hours.	
		Min.	Max.
1	Interest on shovel. Investment \$9,000 to \$10,000	\$ 1.20	\$ 1.33
2	Cost of coal, at \$1.40, 2 to 4 tons....	2.80	5.60
3	Oil, repairs, etc.	.20	.50
4	Labor, at \$2.00 per day, 5 to 8 men.....	10.00	16.00
5	Interest on cars, at \$150 each, 8 to 12 cars	.16	.24
	Items from 6 through 17, practically the same as 2nd 60 ton case.....	4.08	5.12
	Total	\$18.43	\$28.79

Min cost per ton with probable max. output of 1,250 tons
18.43
=——=1.47 cents.

1250
Max. cost per ton with probable min. output of 600 tons
28.79
=——=4.80 cents.

600
COST OF HANDLING HARD SHALE WITH 90-TON STEAM
SHOVEL WITH DINKEY AND CABLE
HAULAGE ON INCLINE.

Item.	Machines and materials used	Per day of 10 hours.	
		Min.	Max.
1	Interest on shovel. Investment \$10,000 to \$11,000	\$ 1.33	\$ 1.46
2-3	Items 2 and 3 practically same as in 75 ton case	3.00	6.10
4	Labor, at \$2.00 per day, 7 to 10 men..	14.00	20.00
5-17	Items from 5 through 17 practically same as previous case	4.24	5.36
	Total	\$22.56	\$32.92

Min. cost per ton with probable max. output of 1,600 tons
22.56
=-----=1.41 cents.
1600
32.92
=-----=4.39 cents.

750
Max. cost per ton with probable min. output of 7.50 tons
COST OF HANDLING A HARD SHALE WITH 110 STEAM SHOVEL
WITH DINKEY LOCOMOTIVE AND CABLE
HAULAGE ON INCLINE.

Item.	Machines and materials used	Per day of 10 hours.	
		Min.	Max.
1	Interest on shovel. Investment \$11,500 to \$13,000	\$ 1.53	\$ 1.73
2	Cost of coal, at \$1.40 per ton, 3 to 5 tons	4.20	7.00
2	Oil, repairs, etc.	.40	.60
4	Labor at \$2 00 per day, 8 to 12 men. .	16.00	24.00
5	Interest on cars, at \$150 each, 9 to 16 cars	.18	.32
6-12	Items from 6 through 12 practically same as above case of 90 ton.	.29	.60
13	Cost of power for hoisting, at \$35 per h. p. per year, 7 to 15 h. p. used	.82	1.75
14	Item from 14 through 17 practically same as above cases.	3.21	3.36

Total \$26.63 \$39.36
Min. cost per ton with probable max. output of 2,000 tons
26.63

=-----=1.33 cents.
2000
Max. cost per ton with probable min. output of 925 tons
39.36
=-----=4.25 cents.

925
Notes on above data:
All interest in table at 4% per annum.
Mens pay at \$2 00 per day of ten hours a probable average.
Horse power used in hoisting drums taken as about the average between no load and full load.

No cost of grading for track estimated because of great variation.

Power for hoisting drum figured same as if bought at cost therefore no depreciation or interest on power plant of factory estimated.

It will be noticed that the addition of the dinkey engine somewhat increases the capacity of the day working plant as shown in the second 60 ton case.

Rise of cost per ton in 60 ton case due to change from soft shale and clays to a hard shale such as could not be handled satisfactorily with any shovel lower than a 60 ton.

COST OF INSTALLATION FOR DIFFERENT CAPACITY OUTFITS.
(See curve sheet No. IV.)

25-Ton Shovel.		Min.	Max.
A	Cost of shovel	\$3,000	\$5,000
B	Cost of cars at \$125 each, 4 to 8 cars. .	500	1,000
C	Cost of tracks, 25 lb. rails, at \$31 per ton, White oak ties at 50c each, laid 2 ft. between centers; spikes, bolts, etc., at \$1.50 per 100 ft., 800 to 2,000 ft. used	415	1,036
D	Cost of 1/2 in. cable at 7 1/2c per ft., 900 to 2,100 feet	67	157
E	Cost of hoisting drum	200	250
F	Cost of power plant for hoisting drum not included .....	....	....
Total		\$41.82	\$74.43

41.82
Min. cost of installation per ton weight =-----=\$167.

25
74.43
Max. cost of installation per ton weight =-----=\$298.

35 Ton Shovel.		Min.	Max.
A	Cost of shovel.	\$4,500	\$7,000
Items from B through F practically same as in above.		1,182	2,442
Total		\$5,682	\$9,442

5682
Min. cost of installation per ton weight =-----=\$162.

35
9442
Max. cost of installation per ton weight =-----=\$270.

45-Ton Shovel.		Min.	Max.
A	Cost of shovel.	\$6,000	\$7,500
B-F	Items from A through F same as above	1,182	2,443
Total		\$7,182	\$9,943

7182
Min. cost of installation per ton weight =-----=\$159.

45
9943
Max. cost of installation per ton weight =-----=\$221.

60-Ton Shovel (Cable Haulage).		Min.	Max.
A	Cost of shovel	\$8,000	\$9,000
B	Cost of cars at \$150, 8 to 12 cars.	1,200	1,800
C	Cost of track, 8,000 to 2,000 feet.	415	1,036
D	Cost of 3/4 inch cable at 16 cents per foot, 900 to 2,100 feet	144	336
E	Cost of hoisting drum	200	250
Total		\$9,959	\$12,422

9959
Min. cost of installation per ton weight =-----=\$161.

60
12422
Max. cost of installation per ton weight =-----=\$207.

60 Ton Shovel (Dinkey and Cable Haulage).		Min.	Max.
A-B	Same as above 60 ton case.	\$ 9,200	\$10,800
C	Cost of tracks same as above except 35 pound rails used.	496	1,240
D	Cost of 3/4 inch cable at 16 cents, 200 to 300 feet	36	54
	300 feet	36	54
E	Cost of drum F (see 25-ton case)	200	250
G	Cost of dinkey locomotive	1,200	1,500
Total		\$11,132	\$13,844

11132
Min. cost of installation per ton weight =-----=\$185.

60
13884
Max. cost of installation per ton weight =-----=\$230.

75-Ton Shovel.		Min.	Max.
A	Cost of shovel.	\$ 9,000	\$10,000
B-G	Same as 60-ton, second case.	2,132	4,544
Total		\$11,132	\$14,544

11132
Min. cost of installation per ton weight =-----=\$148.

THE COLORADO BRICK & STONE COMPANY'S PLANT AND SOME OF ITS PRODUCT

The illustration shown below is a photograph of The Colorado Brick & Artificial Stone Company's plant, situated within two miles of Colorado Springs, close to the town of Pikeview, and within fifteen hundred feet of the main line of the Denver & Rio Grande Railroad. This plant was erected in the fall and winter of 1904-5, and started operating the middle of February, making its first shipment in April. It was the first plant to make sand-lime brick in Colorado. The remarkable success achieved by this Company in the rapid introduction and general acceptance of this building material by the best architects and builders, is the strongest testimony to their progressiveness in constantly adding the latest machinery and devices for improving their product. This is evidenced by the large number of buildings of all kinds throughout the State (but more particularly in the capital city of Denver) that have been faced with this now popular white brick. It is conceded by the best authorities on the subject that no finer sand-lime face brick is made in this country to-day. During the two years of constant operation the Company's products have therefore become firmly established.

Max. cost of installation per ton weight=		14544	
		75	
		Min.	Max.
90-Ton Shovel.			
A	Cost of shovel	\$10,000	\$11,000
B	Cost of cars at \$150, 8 to 12 cars..	1,200	1,800
C-E	Items C through E, inclusive, same as above case.....	1,932	3,044
Total		\$13,132	\$15,844
Min. cost of installation per ton weight=		13132	
		90	
		15844	
Max. cost of installation per ton weight=		90	
		Min.	Max.
110-Ton Shovel.			
A	Cost of shovel	\$11,500	\$13,000
B	Cost of cars, 9 to 16 at \$150 each..	1,350	2,400
C-E	Items C through E same as above, 90-ton	1,932	2,544
Total		\$14,782	\$17,944
Min. cost of installation per ton weight=		14782	
		110	
		17944	
Max. cost of installation per ton weight=		110	



Plant of the Colorado Brick and Artificial Stone Co., on the main line of the Denver & Rio Grande R. R. near Pike View Station, two miles north of Colorado Springs, Colo.

INDIA WANTS AMERICAN BRICK MACHINERY

Consul General William H. Michael reports from Calcutta that there is a great need of a brick-making establishment equipped with modern brick-making machinery. There is abundance of material and a growing demand for the brick. The prices on even the commonest hand-made brick, called pug-mill brick, have advanced within the last year 50 per cent, and an American company with a plant equipped with the best American brick-making machinery would make big money there if started in time.

The plant, as will be seen from the illustration, is built against the side of a sandstone cliff, advantage being taken of the elevation of the sandstone above the press, so that the elevating and conveying appliances in the entire plant consist of three bucket elevators and one belt conveyor. The rock is dumped into the top of a high storage bin, which insures seven days' supply of dry rock. This bin, in the favorable climatic conditions, obviates the need of the ever troublesome drier. The rock feeds out automat-



Residence of Mr. Crawford Hill, 10th and Sherman streets, Denver, Colo. Cost \$40,000. Brick manufactured and furnished by the Colorado Brick and Artificial Stone Company

ically at the bottom of the bin, where it is shoveled into a nine-foot dry pan. The sandstone thus crushed is fed, together with the pulverized lime, through an automatic measuring machine into a tube mill (17"x5"), which pulverizes the right proportion of sand and gives a very complete mixture. At the discharge end of the tube mill moisture is applied to slack the caustic lime, and thence the material is elevated to one of three silos (since the silo system is in vogue at this plant), each holding material for making 27,000 brick. After at least fifteen hours seasoning, the material is conveyed on an 18" belt to an automatic feed agitator over the press, maintaining a regular and uniform mixture flowing down into the press charger.

The Company has the first six mold press, so far as we can learn, that was ever used in a sand-lime brick plant. Their order was a special one, given to the well known firm of press builders, Chisholm, Boyd & White Co., Chicago, who designed

a machine. With this press two men can quite easily take off 20,000 brick in a ten-hour day, and can sometimes go as high as 21,000 per day, and this result is obtained by running the press at about six and three-quarter revolutions per minute, as against nine to eleven revolutions per minute on a four mold press with a daily capacity of but 18,000 brick.

Owing to its being the only "brick city" in the State, the

the heaviest and strongest press they had ever constructed. The makers have every reason to be proud of this machine and its record, as it has never broken down, and no stop in the plant has ever been due to its failure or insufficiency. The press is also equipped with two molds for making ashlar blocks, both rock and smooth face, both of which products have found a good market. The officers of the Company have never regretted installing the six-mold type of press, though there were a great many "experts" who even advised against so large



Residence of Mrs. W. C. Daniels, 8th and Logan Ave., Denver, Colo. Cost \$30,000. Brick manufactured and furnished by the Colorado Brick and Artificial Stone Company

Company's chief market is in Denver, where a great many buildings have been faced with its brick and ashlar blocks, two (or three) of which buildings are illustrated below. The first building in the State of Colorado in which sand-lime brick were used, is the handsome residence of Mr. Crawford Hill, and the other residences, Mrs. Wm. C. Daniels and Mr. A. R. Wilfley, were soon after faced with these white brick. F. L. Harnois was the architect for the first two named and Harlan Thomas for the last named. Cut below illustrates a very handsome stable and about a third of the fall, which was faced on both sides with the ashlar blocks manufactured by this Company, for Mr. Chas. A. Baldwin, at Broadmoor, near Colorado Springs, (MacLaren & Thomas, Architects). These blocks measure $8\frac{1}{4}$ " wide by $16\frac{1}{2}$ " long by about 3" thick. The inside of the stable itself was faced with white sand-lime brick. On this job there were used about 20,000 blocks and 50,000 face brick.

ings in which these brick have been laid.

The Company has not gone in for making common brick, having found there was a sufficient demand for their entire product for facing the best residences and other buildings, but it has been obliged occasionally to meet a demand for a "second" quality brick for facing rear walls, areas, light shafts, etc., where the owners of buildings wished to economize somewhat by using a less uniformly white brick for less prominent walls.

The Company has demonstrated that a variety of artificial sandstone, such as water tables, window and door sills and caps, columns, cornices, etc., etc., can be manufactured with appliances made by the Miracle Pressed Stone Company, of Minneapolis. It can be but a question of a few years when brick will be only one of a number of building materials to be made of sand and lime. The by-product will surely become a very important factor in the success of the sand-lime brick plant.



Stable and wall built in 1906, for Chas. A. Baldwin, at Broadmoor, Colorado Springs, Colo. Faced on both sides with Ashlar blocks, $16\frac{1}{2}$ " x $8\frac{1}{4}$ " x 3", manufactured by the Colorado Brick and Artificial Stone Co.

The Company has furnished the face brick for the Carnegie Library (MacLaren & Thomas, architects), and a Fraternity Building (E. P. Varian, architect), in Boulder, Colo., for the office building of the American Beet Sugar Company, at Lamar, Colo., and they now have a contract for the face brick of a church that is to be built at Lamar (T. P. Barber, architect.) Their brick have been used for facing the inside walls of the handsome station recently completed by the Denver and Rio Grande R. R. Co., also employees' quarters, a fine residence and some office and store buildings, all at Grand Junction, Colo. The artistic library building of the State Normal School, designed by Messrs. Roeschlaub & Son, now in course of construction at Greeley, Colo., is being faced with these brick, including over 3,000 shapes of several different varieties. Space does not permit enumerating more of the long list of build-

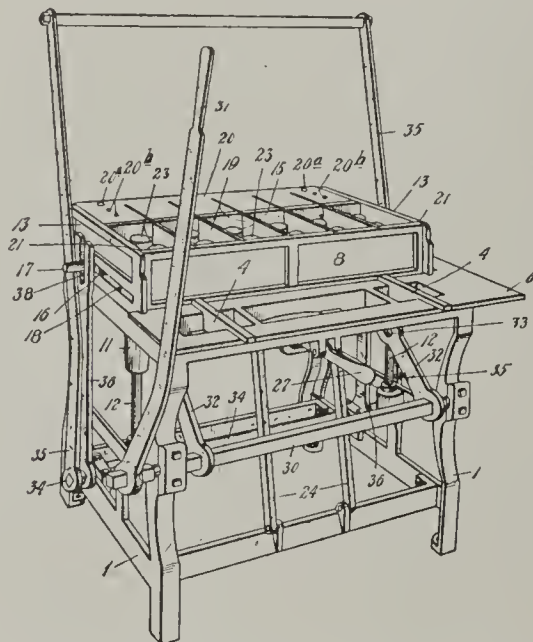
AN EXHIBIT OF RARE INTEREST AT THE UNIVERSITY

A collection of pottery which has recently been placed in the corridor on the second floor of the Natural History Building University of Illinois at Urbana is attracting much attention. This collection has been made by the School of Ceramics for the benefit of its students. There are 175 pieces of American and foreign ware, giving an excellent opportunity to study and compare the various makes. The contrast is noticeable between the American pottery which depends greatly on form and color for its decorative value and the European, the beauty of which lies in the delicacy of its decorative detail. The fine collection will well repay the time of anybody for inspection and examination.

NEW INVENTIONS THAT ARE OF INTEREST TO THE CLAY MANUFACTURER

These new inventions are those that are especially of interest to anyone engaged in the line of building materials and their manufacture, or machinery to make them.

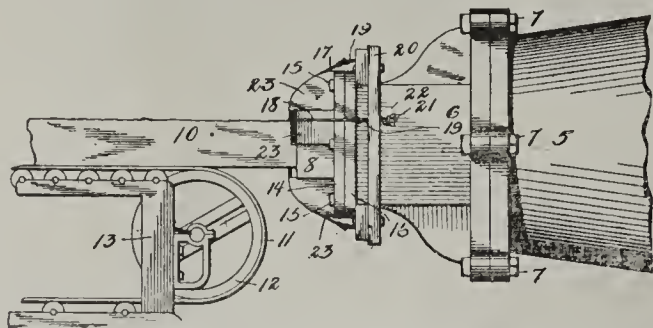
842,412. Brick Machine. John Miller, Minneapolis, Minn., assignor to Winner Block Machine Company, a Corporation of Minnesota. Filed Mar. 7, 1906. Serial No. 304,655.



Claim.—In a machine of the kind described, a flask having movable side plates, one of which is movable into a position out of line with the mold to permit the molded material to be ejected, and the other of which is movable laterally to eject the molded material, substantially as described.

In a machine of the kind described, the combination with a flask having opposite side plates, one of which is movable vertically, and the other of which is movable laterally, of a latch for normally holding the vertically-movable plate in operative position, and independent lever-actuated rock-shafts having connections to said two movable side plates, for imparting the respective movements thereto substantially as described.

842,882. Device for Making Ornamental Bricks. Milton N. Grant, Columbus, Ohio, assignor to the Central Ohio Roofing Tile & Brick Company, Columbus, Ohio, a Corporation of Ohio. Filed April 23, 1906. Serial No. 313,171.

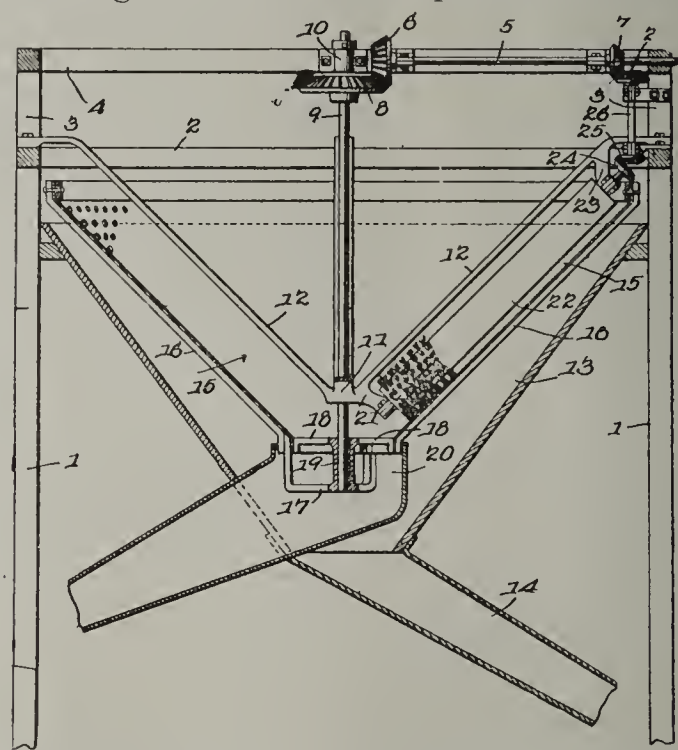


Claim.—In a device of the character described, the combination with a machine having a die through which clay is discharged, of wires arranged at the sides of the mouth of said die and adapted to engage and roughen one side and one edge of the clay which is discharged from said die.

In a device of the character described, the combination with a machine having a die through which clay is forced, of wires arranged at the sides of the mouth of said die and adapted to engage and roughen the surface of said clay, a frame carried by said machine, and tensioning members carried by said frame with which the ends of said wires are engaged.

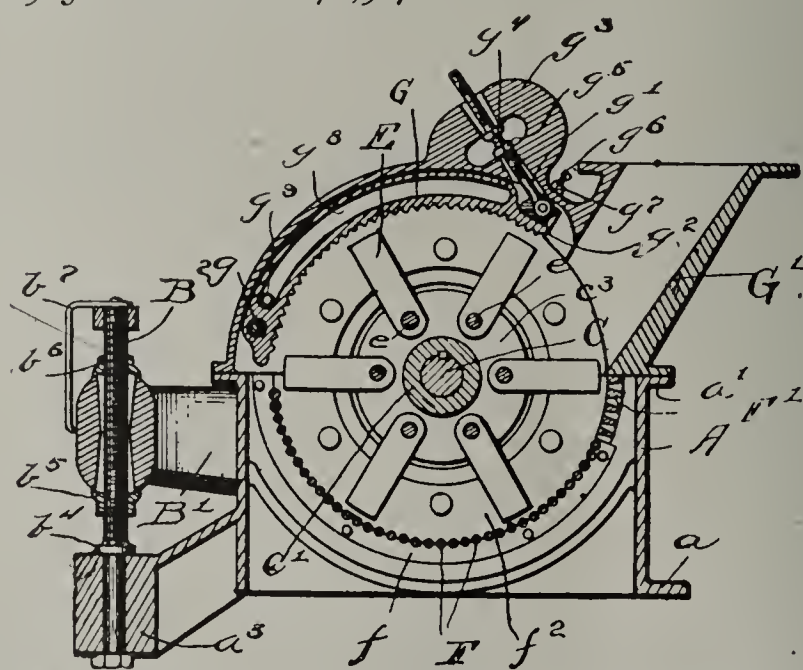
842,599. Clay-Screen. John B. Williamson, Marietta, Ohio, assignor of one-half to William J. Wark, Marietta, Ohio. Filed April 17, 1906. Serial No. 312,255.

Claim.—In a machine of the character described the combination with a frame, a stationary casing supported thereby and having an outlet, and a spout within and extending from the casing; of a rotatable shaft suspended from the frame and extending into the casing, a skeleton frame secured to and rotatable with the lower end of the suspended shaft, a bearing for said shaft suspended from the frame



and disposed adjacent and above the skeleton frame, an inverted frusto-conical screen having an outlet, said skeleton frame being rigidly secured within the outlet, a cylindrical brush journaled at one end within the suspended bearing and disposed within and adapted to contact with the screen, mechanism for rotating the shaft and screen, and means for transmitting rotary motion from said mechanism to the cylindrical brush.

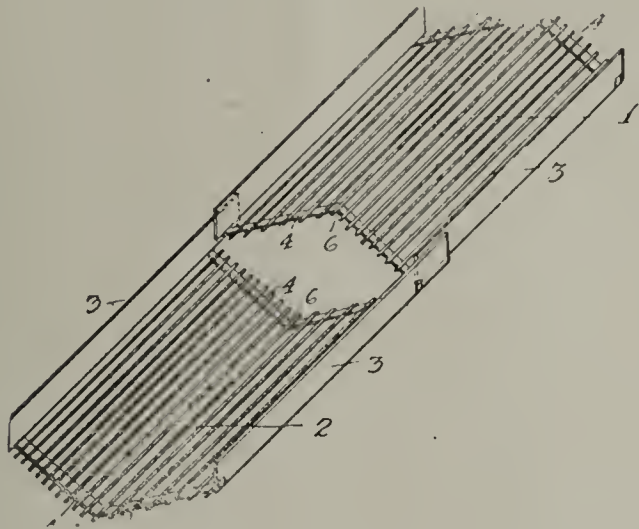
842,430. Pulverizer. Peter L. Simpson, Chicago, Ill., assignor to Herbert S. Simpson, Chicago, Ill. Filed July 24, 1905. Serial No. 270,967.



Claim.—In a crusher or disintegrator, a casing having an upper charging-aperture, a shaft extending horizontally through the casing, hammers pivoted radially on the shaft, a wear-plate in the top of the casing, a screen in the casing below the shaft and traversed by said hammers, levers journaled exteriorly of the casing, self-centering, resilient bearings thereon for said shaft and means for operating the levers to adjust the hammers vertically.

843,785. Screen. Charles R. Allen, San Francisco, Cal. Filed Dec. 19, 1905. Serial No. 292,476

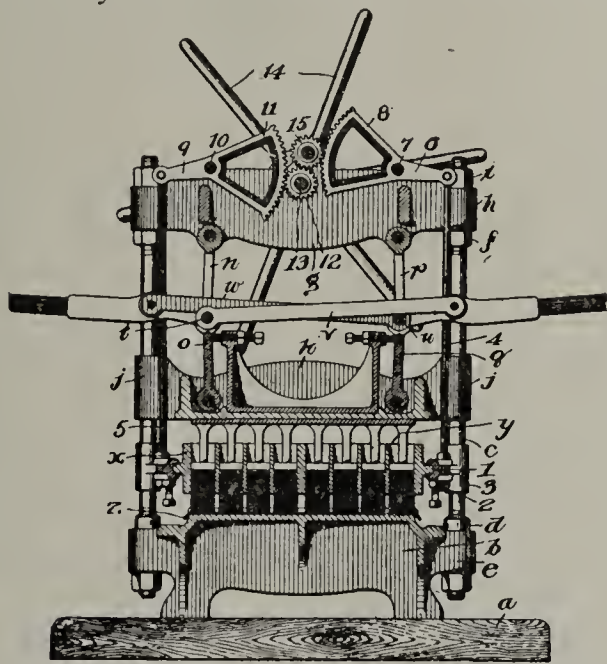
Claim.—In a screen, two inclined sections arranged end to end one above the other, with their adjacent ends overlapping and each section comprising side pieces, cross-



pieces and longitudinal bars, the cross-pieces being bent so as to hold the bars in oppositely-arranged inclined planes, those of the upper section being roof-shaped and those of the lower section trough-shaped.

844,166. Hand Brick-Press. Horace B. Murdock, Detroit, Mich. Filed Mar. 13, 1906. Serial No. 305,930.

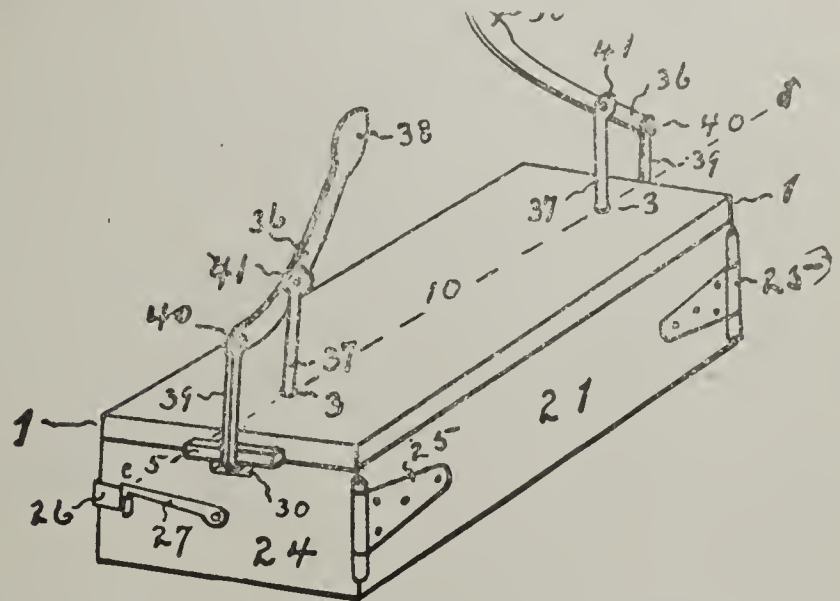
Claim.—In a hand brick-press, the combination of a base, rods secured thereto, a frame carrying plungers slidably mounted on said rods, hand-levers and toggle-joints for operating said frame so arranged as to lock said frame after the hand-levers have been operated, a mold adapted to be placed in position beneath said plungers, and means for lifting said mold while keeping the pressed bricks in position, substantially as described.



In a hand brick-press, the combination of a base provided with an upwardly-projecting rod at each corner, a frame secured to said rods near their tops, a palette adapted to be placed in position on said base-piece, a frame carrying plungers, said frame being slidable mounted on said rods, means for moving said last-named frame, securing devices slidably mounted on said rods, a mold adapted to engage with said securing devices, means for raising said securing devices and therefore raising said mold, consisting of a pilot-wheel, pinions operated thereby, sector-shaped gears operated by said pinions respectively, and rods operated by said gears and connected to said securing devices, substantially as described.

843,087. Brick-Molding Machine. Thorvald G. Jensen, Kimballton, Iowa, assignor to Henningsen and Jensen, Kimballton, Iowa, a Partnership. Filed April 11, 1906. Serial No. 311,054.

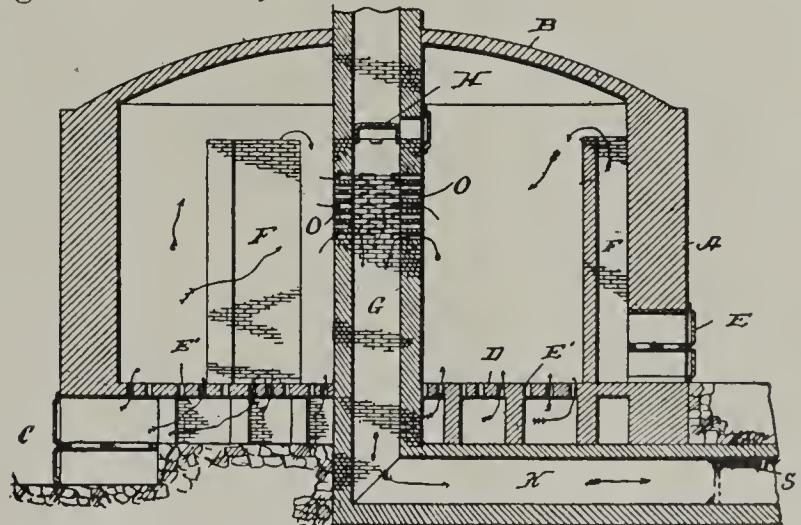
Claim.—A brick-molding machine, in combination, comprising a base having upset partitions 2 formed thereon, said upset partitions having free ends; a removable bed-plate 11 adapted to be seated on said base and to inclose



a part of each of said partitions; the foldable member 20 seated upon said base and adapted to inclose the free ends of said partitions; the apertures 3 formed in said base; the core-lifters 36 adapted to make an entrance within apertures 3, and means to lock and unlock said foldable member.

843,452. Brick-Kiln. David P. Guise, Williamsport, Pa., assignor to Guise Construction Company, Altoona, Pa. Filed Feb. 14, 1906. Serial No. 301,043.

Claim.—In a kiln of the character described, a set of furnaces conveying heat through the floor, to the lower part of the burning-chamber, a separate and distinct set of furnaces conveying heat to the upper part of the burning-chamber, and a central stack in the kiln having side openings about midway of the height of the burning-chamber, said stack forming the draft-flue for both sets of furnaces acting simultaneously.



In a brick-kiln, an upper and a lower series of furnaces communicating with the upper and lower parts of the burning-chamber respectively, a rectangular stack having a plurality of openings about mid-height of the burning-chamber, and means for guiding the direction of the draft in the stack.

MAY FORM BRICK TRUST

B. Broughton and his partner, C. Davis, Bradford, Pa., are figuring with 17 of the largest brick manufacturing plants in Pennsylvania, Ohio and Indiana for the consolidation of their interests in a single corporation, capital \$2,000,000 with Bradford and Pittsburg contending for the main offices.

CLAY RECORD.

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MARCH 30, 1907.

No. 6

"I like to read American advertisements. They are in
themselves literature, and I can gauge the prosperity of the
country by their very appearance."—William E. Gladstone.

When times are dull and people are not advertising is the
very time that advertising should be the heaviest. Ninety-nine
out of every hundred merchants advertise most when there is
least need of it, instead of looking upon advertising as the pan-
acea for their business ills.—John Wanamaker.

Do not whistle up a chimney if you wish to be heard.

Egotism is the glue that enables a man to get stuck on
himself.

Subscribers for the CLAY RECORD now! It costs but
one dollar for the year. If not satisfied we will return
your money.

Heaven may be the fountain head of praise, but it will
do no harm to let out an occasional cheer during your
sojourn on earth.

Men are always telling what they would do under cer-
tain circumstances, but when the aforesaid circumstances
happen along they do something different.

Never speak through a medium that does not reach
your particular audience. The clay field is reached through
the CLAY RECORD, better and more often than by any
other journal. Try it for a while and be convinced, we
ask nothing more than a good fair trial the same as you
would ask when you are selling your goods.

"Show me the business man who gives no thought to his
business, who neglects his trade or technical journal and re-
mains in ignorance of the important things going on in his
line, and I'll show you a man who trusts somebody to do
these things for him, or who will have some vain regrets
when he wakes up."—Ex.

FIREPROOF HOUSES COST ABOUT THE SAME
AS WOOD

Private residences recently built and now under con-
struction in New York show that it is becoming the prac-
tice to use the same fireproofing precautions in residences
as in lofty hotels and skyscrapers. It seems that every
owner is determined that his carefully planned home shall
not be swallowed up in flame and smoke.

In Mr. Charles M. Schwab's house on Riverside
Drive there are more than 100,000 square feet of terra
cotta hollow tile blocks in the arches, partitions and roof.
There is nearly as much in the new residence of Mr.
Payne Whitney, on Fifth Avenue; and in the next house,
there are some 40,000 square feet of this fire-proofing
material.

This is distinctly a departure in the construction of pri-
vate dwelling houses. Not many years ago such extra
precautions against fire as are now becoming customary
were unknown. The change is due partly to the greater
size and value of modern residences but chiefly to the
increased knowledge of the extent of fire losses and the
realization of what due precautions will mean in the way
of prevention.

Houses along Fifth Avenue that have become well
known to sight-seers are protected against fire just as
thoroughly as are dwellings twenty stories in the air.

It is not altogether a question of life saving—life is in
comparatively little danger in low buildings—but of sav-
ing property. When a man of wealth equips his house with
furniture, tapestry and art treasures worth thousands of
dollars, it is a matter of concern that they shall not be
destroyed, hence the elaborate measures to prevent fire.

Within the last few years the price of lumber has in-
creased to such an extent that the fireproof home is no
longer the expensive luxury it used to be. Now the man
of moderate means, even the day workman, can have a home
as safe from fire as the palatial dwellings of the ultra-
wealthy. That this fact is becoming known is shown by
the number of dwellings costing as low as \$5,000 which
are now being erected all over the country. A notable
example is a row of cottages recently built just outside
of Pittsburg, Pa. These were constructed throughout of
hollow tile at a cost of \$4,500 each—about \$500 more
than if they had been built of wood. This increase is off-
set by the fact that the use of hollow clay blocks makes
them warmer in winter, cooler in summer, free from damp
and vermin and as secure from fire as any of the mansions
in Millionaires' row.

OBITUARY

Charles R. Monroe, a brick manufacturer at Washington, D. C., killed himself in a hotel at Atlanta, Ga. He was 54 years of age.

Joseph A. Baldwin, a pioneer sewer pipe manufacturer and one of the best known residents of Akron, Ohio, is dead. He was 86 years of age.

Charles A. Wagner, a brick manufacturer and hotel keeper at Dearborn, Mich., died of pneumonia. He was a member of the firm of A. Wagner & Son, and was born in 1860.

William Randall, one of the pioneer brick manufacturers of LaHarpe, Kansas, died at his home on West Maple Ave. He was 78 years of age and underwent an operation several weeks ago from which he did not recover.

John H. Massman, 53 years of age, and a resident of Kansas City, Mo., since 1879, died of Bright's disease at his home. Mr. Massman for the last twelve years has been a brick manufacturer and contractor. His partner being Frank G. Shinnick.

James H. Rogers, of Union, S. C., died at his home of paralysis, he was treasurer and manager of the Hyatt Brick Works of Columbia, S. C., up to October, 1906, when he received the first stroke. He was born in Scotland 59 years ago and was a prominent citizen.

BRICKLAYERS OF SAN FRANCISCO WILL MANUFACTURE BRICK TO REDUCE THEIR COST

The bricklayers of San Francisco, Cal., will manufacture brick and reduce the cost of that material to the figure at which it sold prior to April 18, 1906, and possibly to less. Bricklayers' Union, No. 7, at the last meeting, decided to acquire a site for a brickyard, manufacture its own brick and deliver it in San Francisco at a figure which will greatly encourage owners and contractors, and reduce the costs of permanent structures to a minimum, thus aiding materially in rebuilding San Francisco in a substantial manner at the lowest possible cost. The union has received assurance of a capital of from \$200,000 to \$500,000 for the purpose of acquiring a first-class plant with a capacity of 1,000,000 brick a week to start with, and room for increase to meet future requirements. Practical and experienced brickmakers, members of the union, have volunteered to lend their best efforts toward making the proposed enterprise a success, and a credit to the craft. Assurance has also been received from the international organization that every union of the craft throughout the United States and Canada, and their 110,000 members will aid with liberal subscriptions to the rehabilitation of San Francisco. It was stated that the price of brick has been advanced from \$10 a 1000 to \$15, since last May, and that brick can be delivered in San Francisco at \$6 a 1000. A committee was appointed with full power to act, to secure a suitable site for the proposed plant, and work is to be started as early as possible.

The union decided that its members would continue to work on concrete buildings in harmony with concrete workers, as any friction, no matter how just the claims, was liable to be misinterpreted, and the union is determined that nothing shall be done which might in the least hamper the reconstruction of San Francisco.

ACCIDENTS, DAMAGES AND LOSSES

The barn of the Indiana Brick Co., at Anderson, Ind., was struck by lightning and consumed together with its contents. Loss \$2,000.

George Bash, an employe of the T. B. Townsend Brick & Con. Co., at Zanesville, Ohio, was caught in a cave in at the clay pit and instantly killed.

The American National Bank, of Edensburg, Pa., has brought suit against the Curwensville (Pa.) Fire Brick Co., to recover the sum of \$2,500 on a note.

The plant of the Ford China Co., at Ford City, Pa., is to be sold April 16 to satisfy \$32,000 first mortgage bonds held by a trust company of Pittsburg. This is the largest pottery in America.

Thomas Oliff, a brick manufacturer at Clio, Mich., has commenced suit against the village claiming that through their neglect water backed upon his yard and did damage to the extent of \$5,000.

The American Clay & Fertilizer Co., with office in Cleveland, Ohio, and plant at North Industry has filed a deed of assignment for the benefit of creditors. The bill was filed by president J. E. Taylor and secretary W. M. Dillhöfer. James J. Clark, of Canton, is the receiver.

Frank Shearer, asst. superintendent of the National Fire Roofing Co., at Hobart, Ind., was instantly killed. He was standing on a table while putting on a belt and his sleeves caught and he was dragged around while the wheel was making 4,000 revolutions a minute. His arms, legs, and neck were broken.

FIRE! FIRE! FIRE!

Damage to the extent of \$2,500 was caused by fire at the Bellmark Pottery, Trenton, N. J.

The Standard Brick Works, Empire, Ohio, were destroyed by fire causing a loss of \$60,000.

The Calder Brick Works at Emporium, Pa., were damaged to the extent of \$10,000 by fire. The main office of the company is at Detroit, Mich.

Fire of an unknown origin caused a loss of \$8,500 to the plant of the Greenwood Pottery Co., South Clinton Ave., Trenton, N. J. James Tams is president of the company.

The Electric Porcelain Works in the east end, East Liverpool, Ohio, was destroyed by fire. The water works plant was out of service on account of a flood. The loss is \$80,000.

The plant of Benjamin Kissinger's Sons, York, Pa., was damaged by a fire supposed to be of incendiary origin, a bottle containing coal oil was discovered by the police and an investigation is being made.

The Aetna Brick Works the property of the Mack Mfg. Co., New Cumberland, W. Va., were badly damaged by a fire which started in the engine room. The plant was almost entirely consumed but was heavily insured.

The Crow's Run plant of the Pennsylvania Clay Co., Rochester, Pa., was destroyed by fire, causing a loss of \$30,000. A workman carrying a lighted torch ignited a bucket of oil which exploded and set fire to the plant.

DIRECT HEAT ROTARY BLAST DRYERS

During the month of February the American Process Company, 62 Williams Street, New York, closed contracts for twenty dryers for handling clay, sand, coal, rock and peat.

They recently installed a small dryer in a plant to do away with three large steam dryers and it has found that while the dryer operates oily several days a week it represents a saving of more than one hundred dollars per month in the coal bill alone.

This well known firm has furnished dryers for many of the largest plants in the United States as well as in many of the foreign countries, write to them if you have anything to dry and don't forget to say you read the CLAY RECORD.

TERRORIZED BY EXPLOSION SYRIANS JUMP TO DEATH AT WHEELING

Wheeling, W. Va.—Eighteen persons are known to have lost their lives, and it is thought that there were a number of other fatalities, in a fire which destroyed the plant of the Warwick Pottery Company in the flooded district of this city. Most of the dead are children. The fire followed an explosion, which terrified the families of Syrian mill operatives living in nearby houses. Frantic with alarm, they jumped from the windows of their homes into the flood, and were drowned in the rushing waters. The scene was distressing. The screams for help of those in the buildings could be heard as far as the steel bridge, a mile away, where thousands of persons had gathered to watch the blaze, unable to render assistance. Not all of those drowned met their death by jumping. Five were drowned by the upsetting of a boat into which they had clambered to reach a place of safety.

Because of the water surrounding the burning factory the firemen were unable to reach the scene with apparatus. Lines of hose were carried to the fire by boats pressed into service. The firemen and all the available police of the city did heroic work in rescuing the drowning. The crew of a boat moored across the river from the burning building manned a yawl and saved about one hundred. The rescued persons and their families offered gifts and rewards of money to the rescuers, who refused to accept the gratuities.

Had the Syrians remained in their homes probably none would have met death. Their homes were not touched by the flames. The loss of life was due entirely to the panic following the explosion. The act of one or two who jumped from windows without reason spread terror to hundreds, who followed suit.

After the fire the Syrians refused to return to their homes, and they are being cared for in the city hall and county jail. Nearly every family lost a member by drowning or has a member among the missing, and the remainder are frantic.

It is estimated that the damage in Wheeling alone since the flood will amount to over \$3,000,000. It will be weeks before any of the local industrial plants will be able to resume operations. The floods are receding, leaving the city a mass of debris and wreckage.

FIRE PROOFING COMPANY SETS SAIL FOR SEWER PIPE COMBINE AND LATTER SEEMS WILLING

Shrill and clear sounded the tocsin of industrial war when official announcement was made that the National Fire Proofing Company, Pittsburg, Pa., was about to engage in the manufacture of sewer pipe. Immediately afterward it was known that the American Sewer Pipe Company had declared its regular quarterly dividend.

It has been known for some time that the National Fire Proofing Company was taking steps looking to an invasion of the field occupied by the American Sewer Pipe Company, and it has also been known that the Sewer Pipe Company has been experimenting with a view to manufacturing fire proofing. After the annual meeting of the Sewer Pipe Company it was announced that W. B. Goucher, treasurer of that organization, had resigned and later the statement was made that with S. B. Goucher, manager of the sales department, and Samuel McAdoo, superintendent of plants, he would begin the operation of a string of sewer pipe plants under the name of the Goucher-McAdoo Sewer Pipe Company.

The announcement by President W. D. Henry of the National Fire Proofing Company was that through this new corporation it would at once begin the manufacture of sewer pipe. There are seven plants located in Illinois, Indiana, Ohio, Pennsylvania and New Jersey.

Just how vigorous the American Sewer Pipe Company will become in the production of fireproofing material has not been made known, but it is asserted that it is in position to push its product in the market. The declaration of the dividend when it was not expected in some quarters shows its financial strength.

ANOTHER BIG BUILDING FOR AMERICAN CLAY MACHINERY COMPANY

Scarcely is one improvement determined upon and started at the factory of the American Clay Machinery Co., Bucyrus, Ohio, than another is found necessary and arrangements are made for its realization. The latest improvement to this immense plant will be a four story pattern storage building which will be erected just opposite the factory on Warren street. The ground has but recently been vacated by the removal of the old dwelling from the lot and within a few days work will begin on the new building. The building will nearly cover the lot with only a small yard left vacant at the rear for storage. The building will be fifty by one hundred feet in size and will be built of brick and fire proofing in order that the valuable patterns of the company will be safe from fire. There will be four floors for the storage of patterns. The ground floor will be twelve feet high and the other three floors will be eight feet each. This will make a building about fifty feet high. The pattern storage has been found necessary for two reasons; to take care of the patterns and to make more room in the foundry. The present pattern room is on Charles Street and this part of the factory building will be added to the foundry.

This big improvement is in addition to the immense power plant which is to be erected on Lane Street.

THE RAYMOND COMPANY WILL BUILD NEW FACTORY

The C. W. Raymond Co., of Dayton, Ohio, have purchased a tract of land comprising ten acres in the best manufacturing part of the City of Dayton and will proceed immediately to the erection of large and commodious buildings, in order to take care of their fast increasing business. They will erect a machine shop, foundry, fire-proof pattern storage, wood department and office, all after the most modern patterns. Plans are now in the hands of the architect and will be shown in these columns at a later day.

Sure it is that this company will be in the running on brick machinery for many years to come.

CERAMIC STUDENTS VISIT BUCYRUS

Prof. Edward Orton, head of the Ceramic department of the State University, Columbus, O., together with a dozen students of the class of clay working, arrived in Bucyrus over the Short Line to inspect the plant of the American Clay Machinery Co., and put in the greater part of the day at the factory and in the clay testing room.

The American company is the largest concern in the world manufacturing clay working machinery and its testing room is an excellent practical lesson in brick making. For this reason the visit of the students will result in much practical benefit.

The young men entered into the matter thoroughly inspecting machines, methods of building and operation of the various machines in a thorough manner. The party spent the latter part of the afternoon in looking over the city and left on the evening Short Line south.

Those in the party were: Prof. Edward Orton, Columbus; J. F. Knote, R. C. Cooper, A. E. Williams, J. D. Whitmer, A. J. Ogle, K. Takahashi, Japan; R. L. Hare, H. A. Henry, H. DesTardines, W. Stolp, J. Stolp, Geo. D. Morris and W. H. Dittoe.

CHICAGO MANUFACTURERS THROUGH NEW BRICK EXCHANGE RAISE PRICE FROM \$5 TO \$6

It was announced March 26 that the competitive war among local manufacturers of brick, begun more than a year ago, and which has been a loss to everybody in the business, has been brought to an end. The price of brick was advanced from \$5 to \$6 a thousand, and the trade has been notified that the new figures will be the standing price until further notice. The advance was arranged by the formation of a central brick exchange, through which the 16 or 17 independent manufacturers of brick will now sell their product.

Neither the Illinois Brick Co., nor the National Brick Co., is a member of the new organization, but both concerns raised their prices immediately upon receiving notice that the independent makers had put their plan into effect.

The independents, which furnish 40 per cent of the local output, have formed a central exchange. The Illinois Brick Company contributes 40 and the National 20 per cent of the output.

POTTERY NEWS ITEMS

Ottumwa, Iowa, is soon to have a new pottery, Joseph P. Young representing Illinois parties is the promoter.

The Ransbottom Pottery Co., Roseville, Ohio, has been incorporated with \$100,000 capital stock by Frank Ransbottom and others.

The Washington County Pottery Co., Marietta, Ohio, has been organized with \$50,000 capital stock by Albert S. Boone and others.

The Indianapolis (Ind.) Stoneware Co., has been incorporated with \$25,000 capital stock, directors are H. C. Johnson, E. O. Johnson, and Nancy L. Johnson.

The Georgia-Carolina Pottery Co., Augusta, Ga., has been incorporated with \$5,000 capital stock with privilege to increase \$100,000. Colin McLean and others are interested.

The Upland Pottery, Upland, Ind., is to be started within a month, 35 men will be employed. Those interested are A. L. Mulkins, Will Woods, W. T. Wilson and Roscoe Bidwell.

The El Reno (Okla.) Pottery Co., have let the contract for the construction of its building to Collins Bros. The size of the building is 240x430 feet. The plant will cost \$100,000.

The Imperial Procelain Co., Trenton, N. J., has purchased the Excelsior Pottery Co.'s plant 300x500 feet, this was made necessary by the fire to their own plant which occurred in February.

The Globe Pottery Co., East Liverpool, Ohio, has been incorporated with \$1,000,000 capital stock by Jacob S. Renkel, N. A. Frederick, Mentor Shenkel, J. T. Herbert, G. J. Owen and F. B. Lawrence.

The Jamaica (N. Y.) Art, Ceramic, Porcelain & Pottery Co., has been incorporated with \$25,000 capital stock. Directors are Louis Romahi, of Flushing, George Hampton and Harvey Thomas of Bronx.

The Pacific Coast Pottery & Terra Cotta Co., San Jose, Cal., has been incorporated with \$500,000 capital stock. The stockholders are A. D. Campbell, R. R. Webb, W. K. Jenkins, L. S. Denton and N. E. Wretman.

Charles Templeton, of Philadelphia, Pa., has purchased the Ironsides Pottery at Bordentown, N. J., the largest individual manufactory of sanitary pottery in this country, and will reorganize same. The consideration was \$200,000.

The Elgin (Texas) Pottery Co., has been incorporated with \$15,000 to build a pottery at Butler. The owners are M. Butler and W. G. Sneed, of Austin, and W. H. Rivers, of Elgin. The plant is to be near the Elgin-Butler Brick & Tile Co.'s plant.

The United States Porcelain Products Co., Findlay, Ohio, now occupying the Bell Pottery plant, has increased its capital stock from \$25,000 to \$50,000. Ex-county Treasurer W. S. Bish has taken an interest in the company and has charge of the office.

The Golden (Colo.) Pottery Co., has been incorporated with \$50,000 capital stock and has purchased the factory formerly operated by the Geysbeek Pottery Co. Stoneware will be made at first. J. C. Marley, C. F. Bourne and J. F. Hunt, of Kokomo, Ind., have moved there and are interested.

SAND OR LIME BRICK OR BLOCK NEWS

The Ft. Edwards (N. Y.) Granite Brick Co., have installed a new press in their factory.

The Long Island Silicate Brick Co. has been incorporated under Arizona laws with a \$250,000 capital stock.

Compton, Cali., is to have a sand lime brick works very shortly. Promotors are now forming the corporation.

The Silica Brick & Stone Co., So. Main Street, Janesville, Wis., are starting up their works for a long run.

The Sandstone brick works at Lancaster, N. Y., has opened up for a season run after being closed all winter.

The Cement Brick Works, Anderson, S. C., has been incorporated with \$4,000 capital stock. J. C. Cummings is president.

Hillier Bros., Waukesha, Wis., have bought the Pioneer Livery Stable and remodeling it for a cement tile and brick factory.

The Aleco Brick Co., has been incorporated with \$200,000 capital stock. Directors are E. H. Foster, H. J. Blackburn and E. Norton, all of New York city.

The Janesville (Wis.) Cement Shingle Co., has been organized with \$10,000 capital stock. Christian and John Nygaard and L. Hanson are the incorporators.

The United States Granite Pressed Brick Co., Los Angeles, Cali., have let a contract for a very large crushing plant to be installed at their works, 16th and Alameda streets.

The site for the new sand lime brick plant at Watertown, S. Dak., has been secured and work on building started the middle of the month. The plant will be in operation by May 1.

The Eureka Brick Co., Webb City, Mo., are now manufacturing brick from the tailings of the lead mines. The capacity of the present plant is 10,000 brick daily and the same will be doubled this season.

The Michigan Sand Lime Brick Co., Grand Rapids, Mich., has been incorporated with \$35,000 capital stock. The stockholders are H. W. Marsh and G. E. Anthony, of Manistee and William Harrison of Grand Rapids.

The Birmingham (Ala.) Architectural Stone & Brick Co., recently organized, will establish plant to manufacture cement brick, concrete blocks and roofing tile. I. T. Houser is president. Office, 5th Avenue and 35th Street.

The plant of the New York Granite Brick Co., at South River, N. J., will soon be started up. The company have orders for a large number of their high grade sand lime brick and will operate the plant at its fullest capacity as soon as possible.

The Cement Roofing Tile Machine Co., Portsmouth, O., with \$50,000 capital stock elected John M. Sheets president and Charles Kinney secretary and treasurer. The company will handle the New Era roofing tile machinery in that territory.

The chances are that Canon City, Colo., will have another brick making plant, this time a sand lime brick works. L. L. Harding and others are interested in the enterprise and have had samples made of sand from the hogback there.

MISCELLANEOUS ITEMS

John Singer, foreman for W. H. Rood, has leased his drain tile works at Goshen, Ind., for a term of years.

The Ponca City, Okla., Chamber of Commerce, have about completed arrangements for a first-class brick works.

The Bangor (Maine) Brick Co., has voted to increase the amount of its capital stock from \$35,000 to \$50,000.

The Logan (O.) Clay Products Co., stockholders decided on an expenditure of \$15,000 for improvements at its last meeting.

The Muscatine (Iowa) Clay & Tile Co. has been incorporated with \$10,000 capital stock. B. F. Greiner is president, J. W. Eells is the secretary.

George F. Cotton, of Table Rock, Nebr., has bought a one-half interest in the Seward (Nebr.) Brick Works, and will remove to Seward so as to have charge of same.

George Kreiger, LaGrande, Oregon, has purchased machinery to make 70,000 brick daily. Electric power will be used, a 60 horse-power motor being part of the equipment.

The Central Brick Exchange, Chicago, has been incorporated with \$5,000 capital stock. Incorporators are, R. W. Rosenstone, William H. Chadwick, and Jacob S. Reppogle.

The Diana Brick & Tile Co., Loeb, Texas, has announced that they will put in a plant to make tile near their brick works. Ernest M. Loeb, of New Orleans, La., is president of the company.

C. R. Smith has resigned as president of the Table Rock (Nebr.) Clay Co., and Willis C. Fellers elected to fill the vacancy. Lewis Fellers was appointed foreman of the upper yard and Philip Pepoon of the lower yard.

Murray & Riberdy Co. has been incorporated at Albany, N. Y., to manufacture brick, with \$12,000 capital stock. Incorporators are Elizabeth Murray, Telesphore Riberdy, Joseph Riberdy, Sinai Riberdy, of Cohoes, N. Y.

The W. L. Damon Brick Co., New Britain, Ct., has been incorporated with \$30,000 capital stock. The officers are W. L. Damon, president and treasurer; Harold W. Damon, vice-president, and D. T. Holmes, secretary, all of New Britain.

W. W. Ellis & Son, are taking down their plant at Canton, Ill., and will begin the building of their new plant on the site of the West Canton Coal Co., as soon as the weather will permit. They will make brick out of shale and on a much larger scale than before.

James E. Romig is making plans to establish a large brick making plant on his farm near Hillside Station, Abington, P. O., Montgomery Co., Pa. The plant will be 35,000 brick daily capacity, 100 horse-power engine and boiler, four large kilns, drying sheds, etc.

The Marion (Ind.) Brick Works, which quit work in that city in August, 1905, is preparing to resume operations in the spring. They have bought the Overman farm of fifty-five acres and will extend its tramways and resume. Improvements are now being made. R. H. Lanyon, of Chicago, is president; Delmar Lincoln, of Indianapolis, is manager and F. A. Cole, of Marion, the local manager.

Louis Greig, St. Martinsville, La., wants information and prices on brick machinery.

J. O. Houston, Queen City, Texas, will put in a brick plant, making 25,000 brick daily.

W. L. Person, Rocky Mount, N. C., is in the market for a second hand brick making plant.

Mr. Spiegler, of Chicago, has bought the tile works at Buckley, Ills., and moved there with his family to operate same.

The American Brick Co., Hemlock, Perry Co., Ohio, has been incorporated with \$100,000 capital stock by W. J. Jones and others.

A. R. Allen, of Elk City, Kansas, is the manager of the Okmulgee (Ind. Ter.) Brick Works, which recently moved from Chandler, Okla.

The Marita Brick & Tile Co., has been incorporated at Everetts, N. C., with \$20,000 capital stock by W. H. Adkin, W. S. Barnhill, J. G. Barnhill and others.

The Carrollton (Texas) Press Brick Co., has been incorporated with \$30,000 capital stock. Incorporators are C. E. Jackson, W. T. Squibb and Andrew Jackson.

Chester Garner, Tom Baldwin and Joe Mannett of Corona, Cal., have found a deposit of clay six miles southwest of town, in Fresno Canyon, and they will develop same.

The work has been started on the large brick plant of the Atlas Brick Co., at Moxehala, Ohio, 60 miles south of Columbus, the main office of the company. F. H. Mutchler is president and W. B. Peters secretary and treasurer.

Partridge, Minn., parties have found a clay bed and have taken steps to start a brick works.

The Commercial Club, of Ft. Smith, Ark., have their "hooks" out for a drain tile and sewer pipe plant.

W. R. Houston has been appointed manager of the Port Credit (Ont.) Brick Co., in place of Fred R. Miller, who resigned.

The East Peoria (Ills.) Brick Co., has been incorporated with \$30,000 capital stock by A. H. Kanne, F. J. Kanne and G. C. Kanne.

The Webster City (Ia.) Brick & Tile Co., owned by C. W. Soule is to have a new installation of machinery. The same will be put in at once.

The Ripley (O.) Brick Co., has been incorporated with \$25,000 capital stock E. T. Kirker, W. B. Kirkpatrick, L. S. Wiles, W. R. Wilson and A. W. Francis.

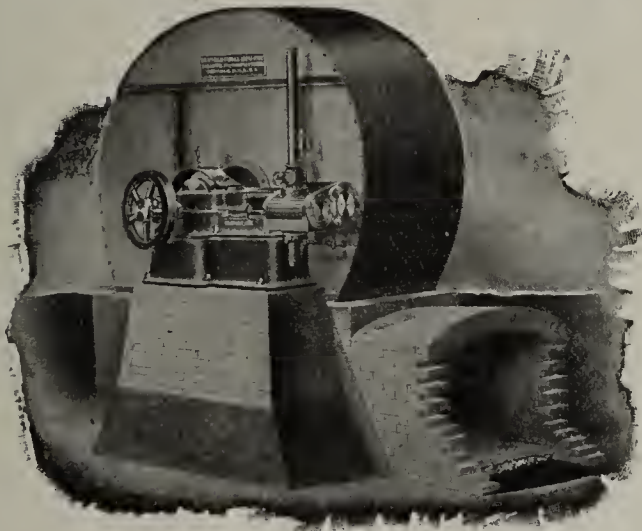
The Leavittsburg (Ohio) Brick Co., has been organized with \$30,000 capital stock by L. F. Hunter, E. J. Burrows, W. P. Starr, Fred J. Barnes and Warren Thomas.

The Ft. Smith (Ark.) Brick & Gas Co., recently elected the following officers: W. O. Caldwell, president; W. R. Abbott, vice-president; H. B. Salls, secretary and C. W. Jones, treasurer.

W. S. Elton, of the Western Clay Products Co., met with the managers of the Commercial Club, of Lehi, Utah, and it is likely that they will build a plant there and utilize the Kendall Kaolin and clay beds.

The Paducah (Ky.) Brick & Tile Co., has been incorporated with \$40,000 capital stock. This is an incorporation of the Chamblin & Murray works. C. H. Chamblin is president, J. A. Murray, vice president and Arthur Murray, secretary and treasurer.

Buffalo Waste Heat Dryer.



"Buffalo" Waste Heat Fan Direct Connected Engine
Bottom Horizontal Discharge.

The first **WASTE HEAT DRYER** bore the name "BUFFALO." Economy is the watchword and in the third of a century since we began solving drying problems, there has been steady engineering progreesess.

"**BUFFALO**" **WASTE HEAT FANS** take the **WASTE HEAT** from the kilns and deliver it to the drying chambers, which can be automatically kept at any temperature and humidity. "BUFFALO" FANS have water-cooled bearings when necessary.

APPLICABLE TO BRICK, TILE AND TERRA COTTA PLANTS.

Our thirty years of success is due to a constant study of clays.

Write, stating requirements, and ask for catalog.

BUFFALO FORGE COMPANY, BUFFALO, N. Y., U. S. A.

CANADIAN BUFFALO FORGE COMPANY, MONTREAL, CANADA.

R. W. Tidrich, of Clarksdale, Miss., is at Helena, Ark., with a view of starting a tile factory there.

The Alger (Wash.) Brick & Tile Co., have installed a tile making machine which will make 20,000 tile daily.

The Kensington (Ct.) Brick Co., is preparing to enlarge the capacity of their yard to 6,000,000 brick annually.

Citizens of San Jose, Cal., have formed a company for the building of a terra cotta plant that will cost a half million dollars.

The Algona (Ia.) Brick & Tile Co., will increase their capacity by building two new kilns and putting in larger boilers. A. M. Coan, is the secretary and manager.

A meeting has been held in the office of P. C. Hawkins in McGaheysville, Va., for the purpose of organizing a company to manufacture brick at the rate of 30,000 daily.

The Oklahoma Vitriified & Pressed Brick Co., has been incorporated with \$100,000 capital stock by C. A. Hashour, L. E. Hunter and L. R. Hashour, of Cleveland, Oklahoma, at Oklahoma City, Okla.

M. G. McNaughton, of Villisca, Ia., has accepted the position of superintendent of the Granite Brick Co., Burlington, Ia. He managed the Villisca plant for eleven years. W. H. Capps will succeed him.

The Empire Brick & Stone Co., Spokane, Wash., has been organized with \$100,000 capital stock and will take over the plant of the Empire Pressed Brick Co., at Rockford, besides engage in the stone business. F. E. Goodall is president; E. H. Gimper, vice-president; J. H. Ehlers, treasurer and R. K. Green, secretary and manager.

The Southern Clay Mfg. Co., Chattanooga, Tenn., will reopen and operate its plant at Chilhowie, Va.

F. L. Byron an inventor of a new process for making fire brick, will build a plant at Cranbrook, B. C.

R. L. McCormack has been awarded the contract to build a brick plant at Bonner Springs for the Kansas City (Mo.) Gray Brick Co.

The East Ithaca Red Brick & Tile Co.'s plant at Ithaca, N. Y., is undergoing a few improvements. This plant is managed by Geo. W. Cook.

Send for catalogue 56S to the New York Blower Co., 25th Place & Stewart Ave., Chicago, if you are interested in drying your clay goods cheaply.

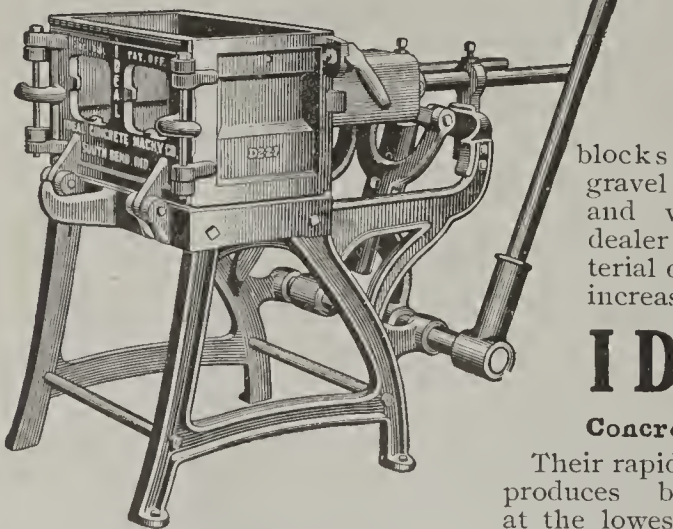
The Ideal Concrete Machinery Co., dept W., South Bend, Ind., is one of the largest manufacturers of concrete machines, for both blocks and brick, in America.

The Grand Junction (Colo.) Pressed Brick & Tile Co., has been incorporated with \$30,000 capital stock by E. H. Kern, Chas A. Van Hornbeke and G. Van Hornbeke.

The Chatsworth (Ga.) Brick & Power Co., has been formed and wants prices on machinery to make 20,000 brick daily. J. M. Sanders, box 277, Dalton, Ga., is president of the company.

The Royal Wooster Brick Co. has been incorporated with \$75,000 capital stock at Toledo, Iowa. The officers are C. G. Kaiser, of Dysart, president; Conrad Brandau, of Dysart, vice-president; Oscar Casey, of Dysart, treasurer and H. J. Stiger, of Toledo, secretary. They will purchase the Branstetter Tile Works, at Wooster, Ohio, and operate same.

A NEW WAY TO SELL CEMENT



There is sale for cement in the form of Concrete Building Blocks as well as in barrels and bags.

The Ideal Concrete Machine makes building blocks from sand, gravel and cement, and will help any dealer in building material double sales and increase profits.

IDEAL

Concrete Machines

Their rapidity of operation produces building blocks at the lowest possible cost. Embodiment the only principle (face down) permitting the practical use of rich facing material with less expensive material in back of blocks.

Ideal Concrete Mc'h'y Co.
Dept. W.

South Bend - - - Ind.

"Mussens Limited, Montreal,
Sole Agents for Canada"

Ideal Concrete Blocks are adapted to any building purpose. Will undersell and outsell all other materials.

Adaptable as to size of block and countless designs of face and natural stone effect.

Wonderfully simple. No chains, springs or gears.

Catalogue and fortune making facts on application.

DIRECT HEAT

DRYERS

FOR

**BANK SAND
GLASS SAND
ROCK, CLAY
COAL, ETC.**

All Mineral, Animal and Vegetable Matter.

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue W. C.

American Process Co.,

62-64 William St.

NEW YORK CITY

Chenneuer Bros., Druggists at Roanoke, Ind., have purchased a one-half interest in the tile mill and same will be improved.

The Taylor-Thomas Brick Co., Crystal Springs, Miss., have started making brick. Manager Thomas says that he is swamped with orders.

The Arvada (Colo.) Shale Brick Co., has been incorporated with \$75,000 capital stock by James J. Cooks, O. J. Fowler and H. H. Coon.

The Gulf States Brick Co., Beaumont, Texas, has been incorporated with \$250,000 capital stock. E. M. Loeb, Sam Parks, T. J. Feibelman and R. M. Hallowell.

The plant of the Kattanning Clay Products Co., at Cowanshannock, Pa., will be in operation by the last of April. Will Hilton is directing the construction.

The Harbison-Walker Co., of Pittsburg, Pa., have purchased a site for a plant at East Chicago, Ind., for a fire brick plant that will require 250 hands to operate.

The Logan Brick Supply Co., Toledo, Ohio, has been incorporated with \$10,000 capital stock by Wm. G. Nichols, Francis Long, Alonzo Reilly, C. W. Filer and Wm. Sandys.

The A. W. Bender Realty & Brick Co., Utica, N. Y., has been incorporated with \$20,000 capital stock. The directors are A. W. Bender, D. D. Bender and W. A. Douglass, all of Utica.

The Windsor Park Brick Works, York, Pa., have bought the plant of the York Brick Works, and will improve and operate same, John F. Raeyling and W. S. Souders are the owners of the company.

The Chmielewski Patent-kiln on page 41 of this issue of the CLAY RECORD is worth investigation.

A company is being organized at Searchy, Ark., for the manufacture of brick and tile that will cost \$10,000.

John Arbogast has gone from Farmer City, Ills., to Lumberton, Miss., to make brick. His son Fred preceded him.

The Jacobs Brick Co., Berlin, Ct., has filed a certificate of organization. M. E. Jacobs is president, L. S. LeClair, secretary and treasurer.

Material is on the ground to rebuild the plant of the Defiance (Ohio) Tile Mills Co., which was destroyed by fire last fall. New machines are likely to be installed.

Christ Diehl, Jr., and Jacob Baltes, Defiance, Ohio, have bought out the two H. C. Monen Brick plants and will operate same. Under the new management both plants will be improved.

The Cooley Ball and Sagger Co., Mayfield, Ky., has been organized for the purpose of developing clay lands at Clay Switch. Mattie Cooley, J. W. Cooley and W. N. Jeffrey are the owners.

V. T. Price, Rapid City, S. Dak., has purchased the Marshall Brick Co.'s holdings and will overhaul and enlarge same. The new company will be known as Rapid City Brick & Tile Works.

The Crucial Fire Brick Co., Rome, Ga., has been incorporated with \$30,000 capital stock, C. N. Fuller is the chief promoter. The incorporators are R. W. Graves, J. L. Bass, R. P. Yancey, C. D. McCollister, H. Yacey, J. M. Graham, R. A. Denny and S. A. Marshall.

The Burning Question is Solved

THROUGH THE

CHMELEWSKI PATENT KILN

A clever combination of the common updraft and the modern continuous down draft Kiln.

The limit of simplicity and effectiveness.

Gives thoroughly well burned, clean colored bricks without any cracks.

Saves about 60 to 70 per cent fuel and can be burned with almost any kind.

Daily capacity up to 100,000 bricks. For descriptive pamphlet write to

Dr. HERMAN RABERGH

Sole Agent in the U. S. A. and Canada

24 Cottage Ave.

Fitchburg, Mass.

CLAY RECORD.

FOR SALE

One 40 h.p. gasoline engine, one semi-automatic side cut brick cutter. Wallace Mfg. Co. make. One disintegrator and dump table made by Horton Mfg. Co.; 75 good brick moulds, also trucks and wheelbarrows. All in good condition. Address
W. H. VANDER HAYDEN,
Ionia, Mich.

BRICK AND TILE MACHINERY AT SACRIFICE

Where a country is tiled, factories are offered complete, or in part, Cheap. Have several Brewer Mills for sale, and others.
Engines, Boilers, Crushers, Drying Pipes, etc. If you wish to buy or sell write
Brick and Tile Machinery
Secor, Ill.

FOR SALE.

An up-to-date brick plant. Capacity 35,000 brick Cheap fail and labor. Fine shipping facilities and an abundance of pure loose clay. Local demand takes almost entire output at good price. Will bear close investigation. Good reason for selling.
Address, WM. M. READ,
Princeton, Ind.

STEAM SHOVEL WANTED

A second-hand Steam Shovel, small or medium capacity, in good condition, is wanted by
STRAIGHT BROS. CO.
Fonda, Iowa

FOR SALE OR LEASE

A thoroughly modern up-to-date Brick Plant with a capacity of 20,000 to 25,000 per day. Make all kinds of brick. Good shale. Don't draft kilns and the best of machinery, including dry press.
CLAY CENTER BRICK CO.
Clay Center, Kansas

BRICK YARD FOR SALE.

Brick Yard for sale cheap. A bargain to the right party. Good market at hand. For further information address
BRICKMAKER,
Care Clay Record, Chicago, Ill.

FOR SALE AT A BARGAIN.

One Semisteel Company's Sampson Sand-lime Brick Press in good condition, used but a short time. Address W. P. BRUBAKER,
Jacksonville, Fla.

FOR SALE

One Chambers pug mill, practically new, sufficiently large for any output. A first class machine in every respect. Address
ALONZO CURTIS BRICK CO.,
Grant Park, Ills.

MACHINERY FOR SALE

The following machinery not used by us but all in good condition, will be sold at very reasonable prices.

One Penfield Single Mould Power Re-Press, capacity 10,000 a day.

Two Fate Company Bensing Automatic Side cutting tables. American Enamelled Brick & Tile Co.
1 Madison Ave., New York.

FOR SALE

20,000 Wooden Pallets, 32 inches by 10 inches, 5/8 inch lumber, legs 3 1/4 inches high, 1 1/4 inches thick. A bargain if taken at once. Address
JASPER ADAMS
Battle Creek, Mich.

FOR SALE

One Second hand Four Mould Dry Press, in good order. One of the best presses on the market. Answer quick if you want it.
Address G. care Clay Record
Chicago, Ill.

FOR SALE

Two complete sets brick making machinery, including Chambers brick machines, elevators, clay rolls, granulators, hoists, etc.
ILLINOIS BRICK CO.,
Chicago, Ill.

FOR SALE

For Sale—75 Acres; 60 feet of shale, 10 feet of Fire Clay, 3 feet of Coal developed. Excellent conditions. Railroad track.
Price, \$15,000. Address.
NEW CENTRAL COAL CO.
Terre Haute, Ind.

ENGINES AND BOILERS

Corlis engines, 20x48, 18x36, 16x42, 12x36. Also 40 other sizes and styles in stock.
Boilers, Tubular, 84x18, 78x16, 72x18. Also 60 other styles and sizes in stock.
Send specifications of your requirements and we will make you a proposition that will interest you.
THE RANDLE MACHINERY CO.
1732 Powers St., Cincinnati, Ohio.

A COMPLETE BRICK-MAKING OUTFIT FOR SALE CHEAP

We are consolidating our paving brick plants. This throws out of use.
One Center Crank, 100 horse power Engine.
Two Boilers, 50 horse power each.
One Feed Pump.
One eight foot Frost Dry Pan, wood frame,
One Elevator. One Pug Mill.
One Augur Machine, 50,000 capacity.
One Freese Automatic Cutter.
Shafting, Pulleys and Belting. All in good working order and valued at over \$5000. Will sell same cheap. Immediately delivery
STREATOR PAVING BRICK CO.
Streator, Illinois

FOR SALE.



Right and left-hand One, Two and Three Way Switches, of various gauges, radius and weight rail, at special prices.
THE ATLAS CAR & MFG. CO.,
Cleveland, Ohio.

FOR SALE—CHEAP—New and re-laying rails, 12, 16, 20 and 25 pound. For prices, address
ATLAS CAR & MFG. CO.,
Cleveland, Ohio.

FIRE CLAY FOR SALE

On one hundred and sixty acres, N. Y. C. R. R., at Salt Lick Siding, near Karthaus, Pa. Expert after careful examination reports 350,000 to 400,000 tons.

We have our own railroad over property and are mining the coal. We desire to sell clay either at lump sum, on royalty, or delivered on cars at mines.

The clay has been thoroughly tested and the deposits are opened on the property in several places for examinations.

Chas. H. Thompson.

18th and Indiana Avenue,
Philadelphia, Pa.

FOR SALE OR EXCHANGE

45 ton, 1 1/2 yard Vulcan Steam Shovel in first class condition. Price \$3500.

One No. 2 Giant Brick Machine, made by the American Clay Machinery Co.

One large sized Granulator.

One set of Large Sized Rolls.

Fifty double deck Brick Cars.

Large quantity of rails and steam pipe.

STEGER BRICK CO.

Suite 306. 145 La Salle St., Chicago, Ill.

POSITION WANTED

Young man wants position as manager or superintendent stiff mud brick yard. Small face brick yard preferred. Best references. Address
Pittsburg, care Clay Record
Chicago, Ill.

FOR SALE

We offer for sale at a sacrifice the following BOYD Presses:

One 3 Mold Standard 1891 Pattern
Two 4 Mold Standard 1897 Pattern

All in good condition. Inspection invited. Immediate shipment.

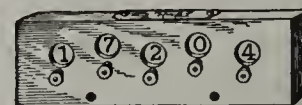
Harrison-Walker Refractories Co.,

Farmers Bank Building,

Pittsburgh, Pa.

FOR SALE CHEAP.

One Monarch Brick Machine No. 166, capacity 35,000. One Brewer Clay Crusher, one Sander and Dump Table, four Brick Barrows, three Brick Trucks. About 16,000 Lath Pallets. Shafting and Pulleys. All the above are in good condition. Will sell all or part to suit purchasers. Address,
PFEFFER & SON,
Gettysburg, Pa.



No better made, cut from \$8 and \$10, to

4 Wheel, \$3.00

5 Wheel, \$3.25

Guaranteed.

Sold by all dealers

Paper Joggers quoted.

R. A. HART, 41 White St.,

BATTLE CREEK, MICH

FOR SALE OR TRADE.

Two Brick and Tile Plants in Iowa and Illinois, now running. Address,
THE KILN DOCTOR,
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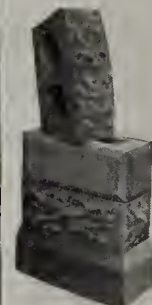
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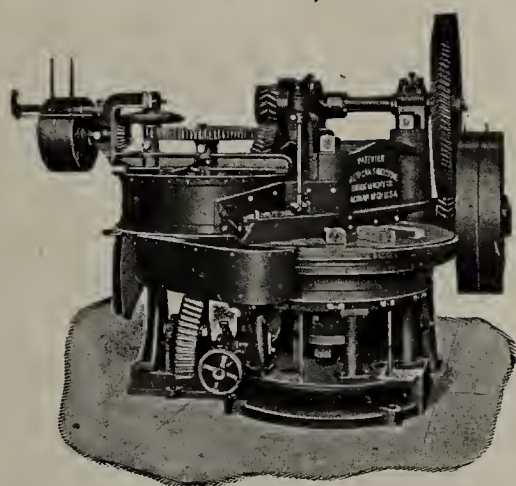
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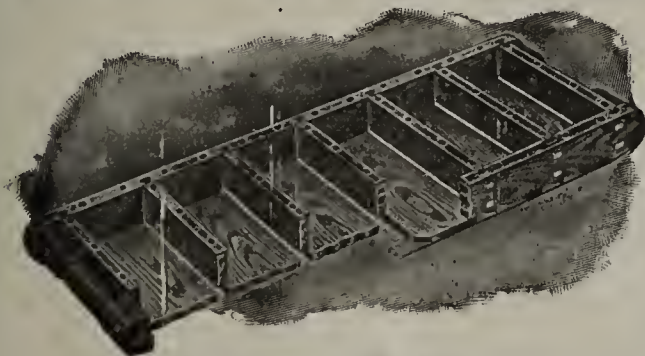


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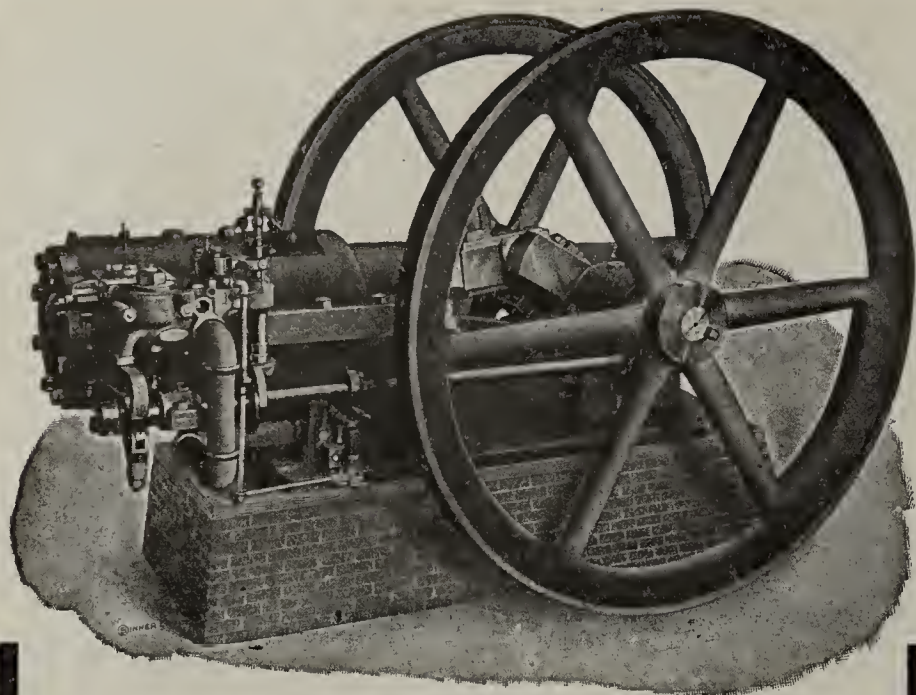
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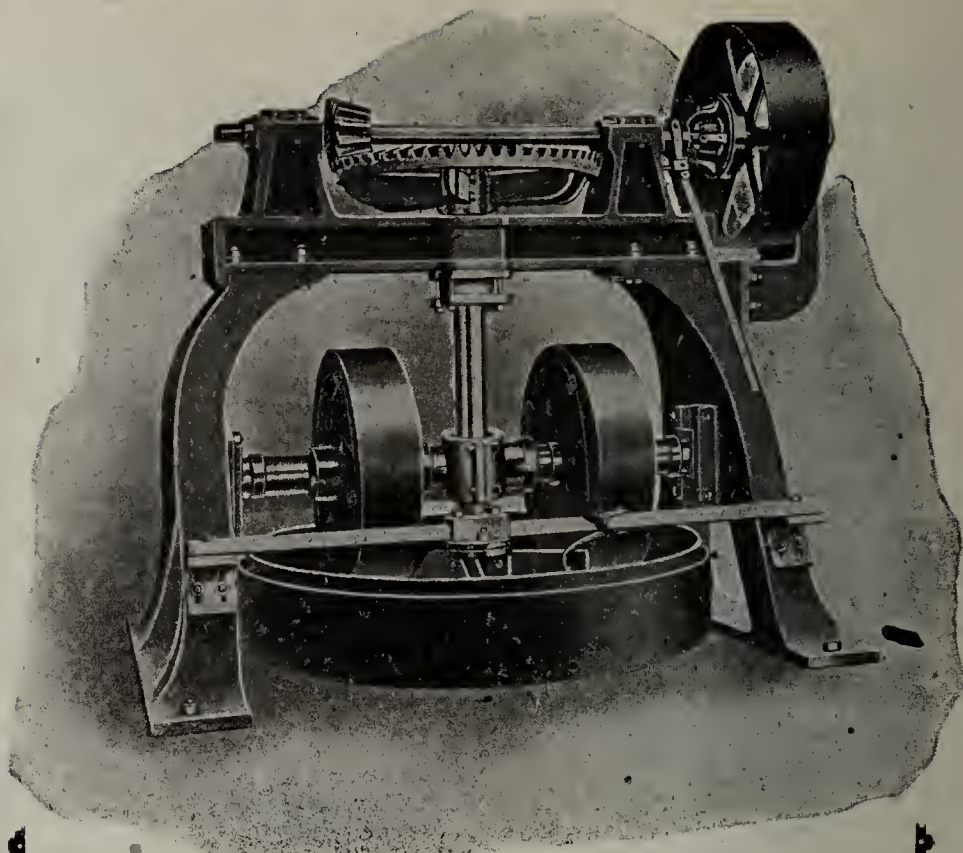


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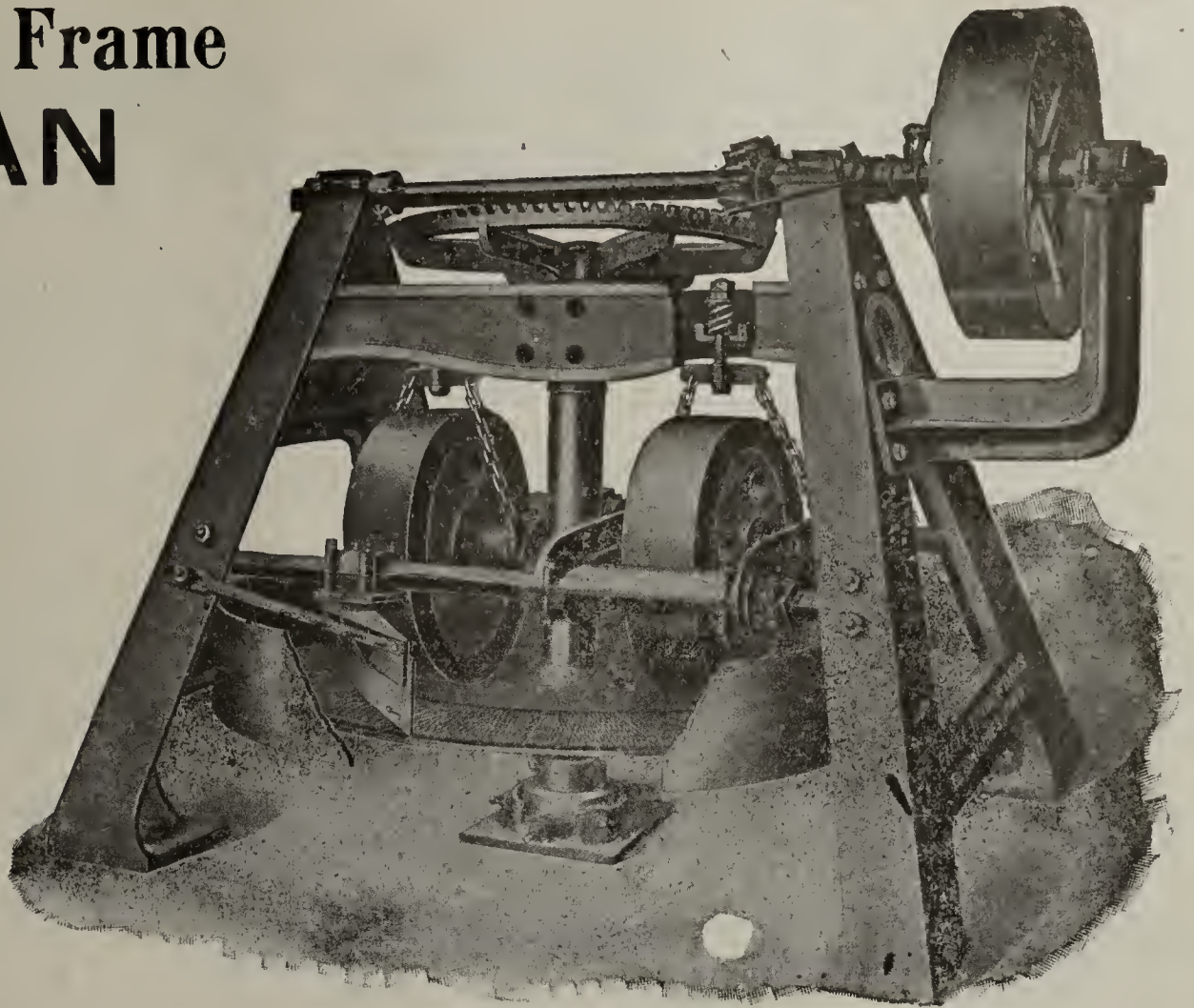
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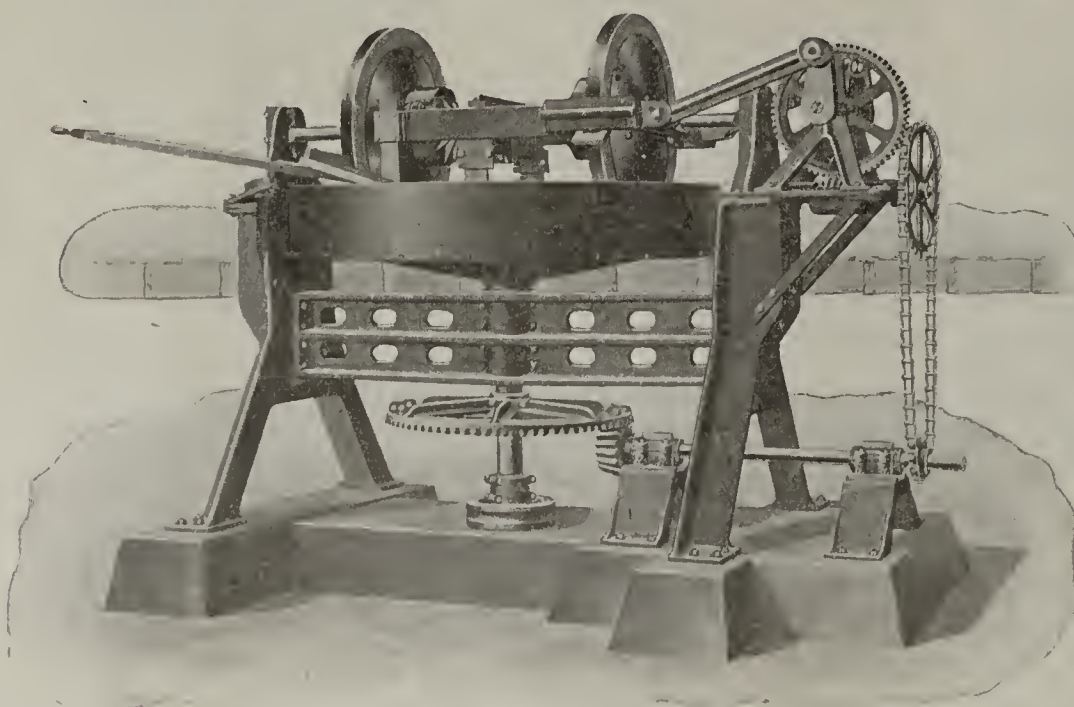
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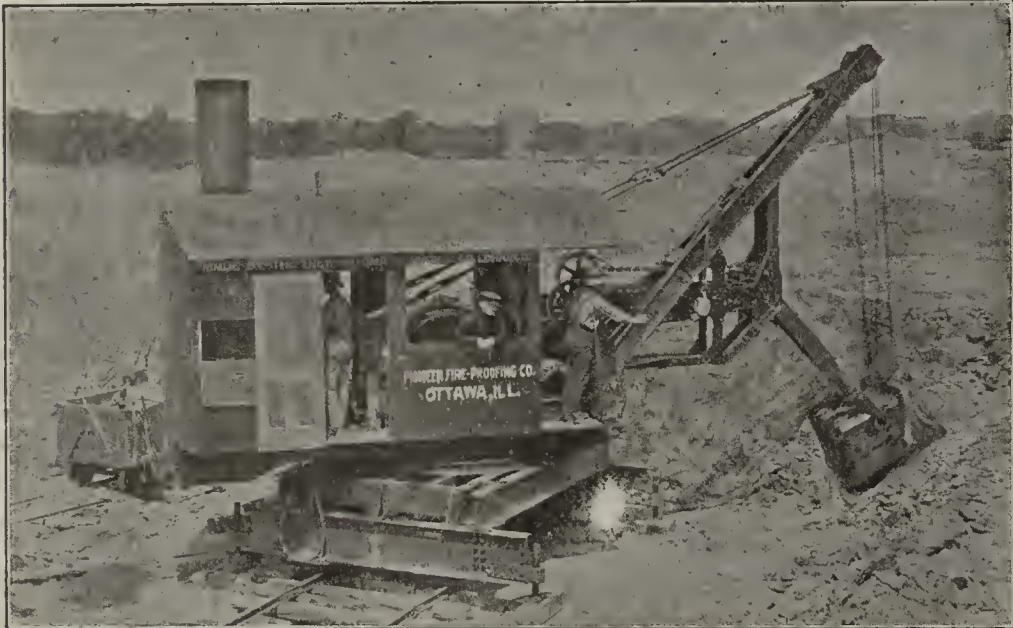
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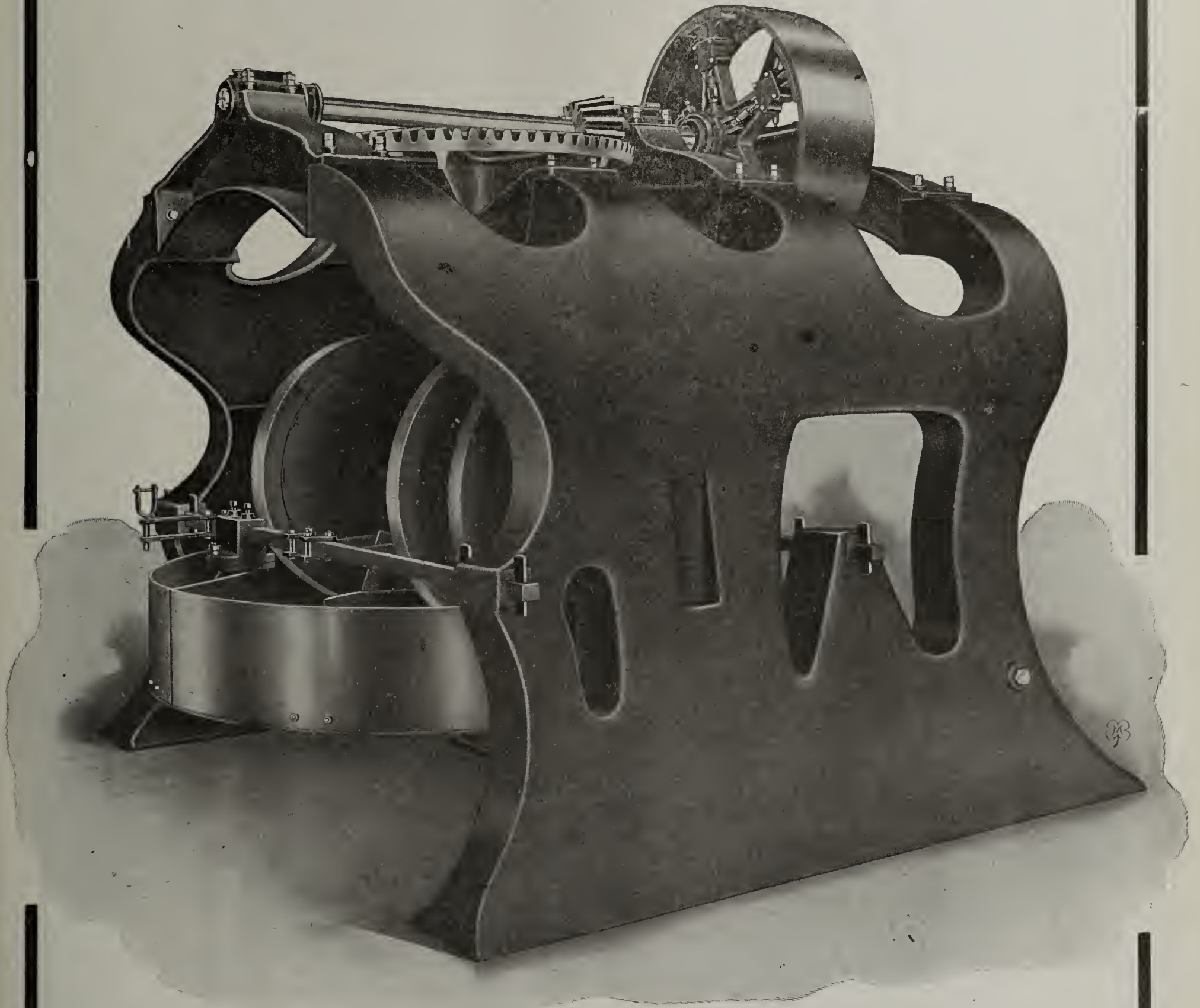
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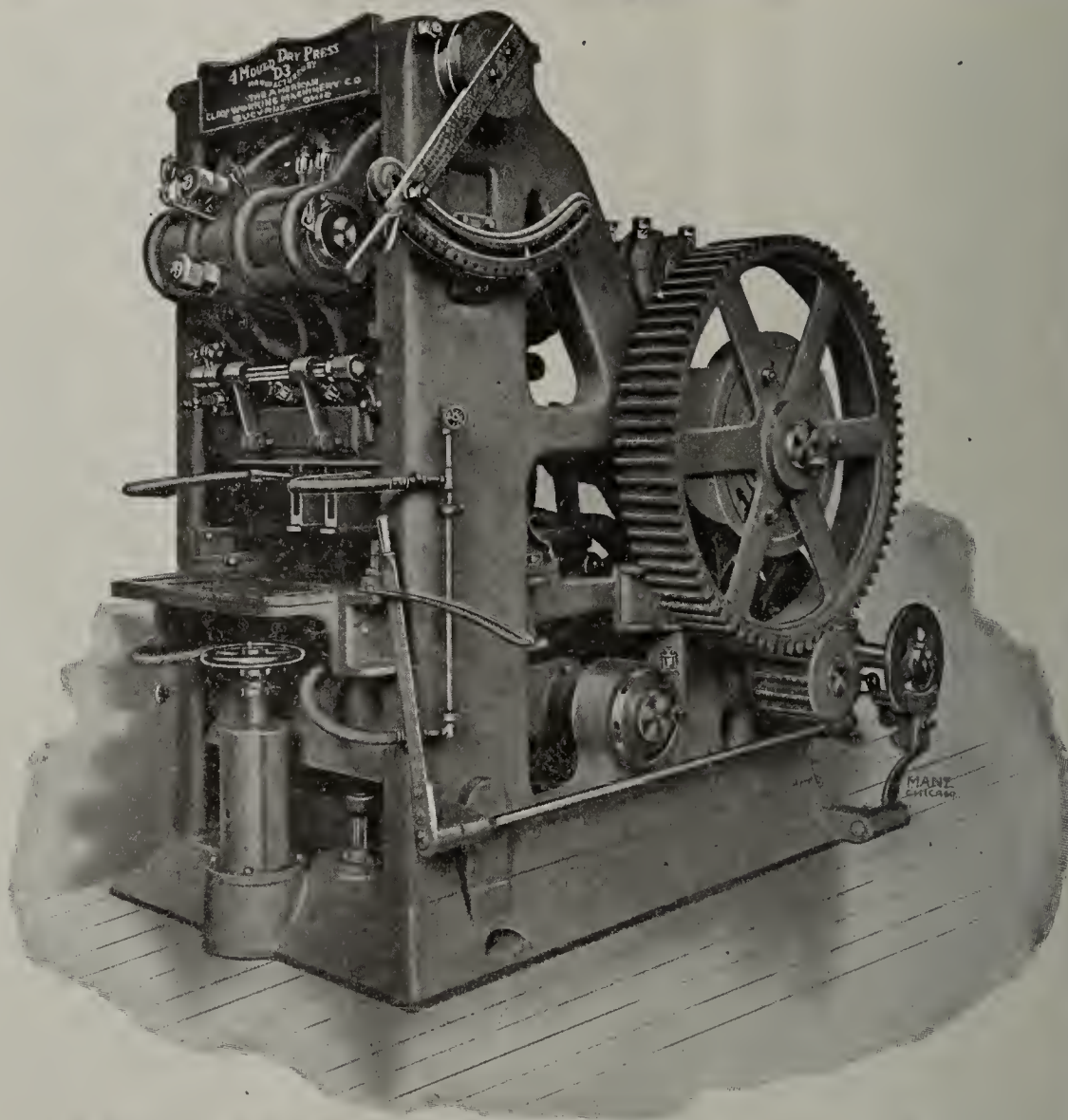
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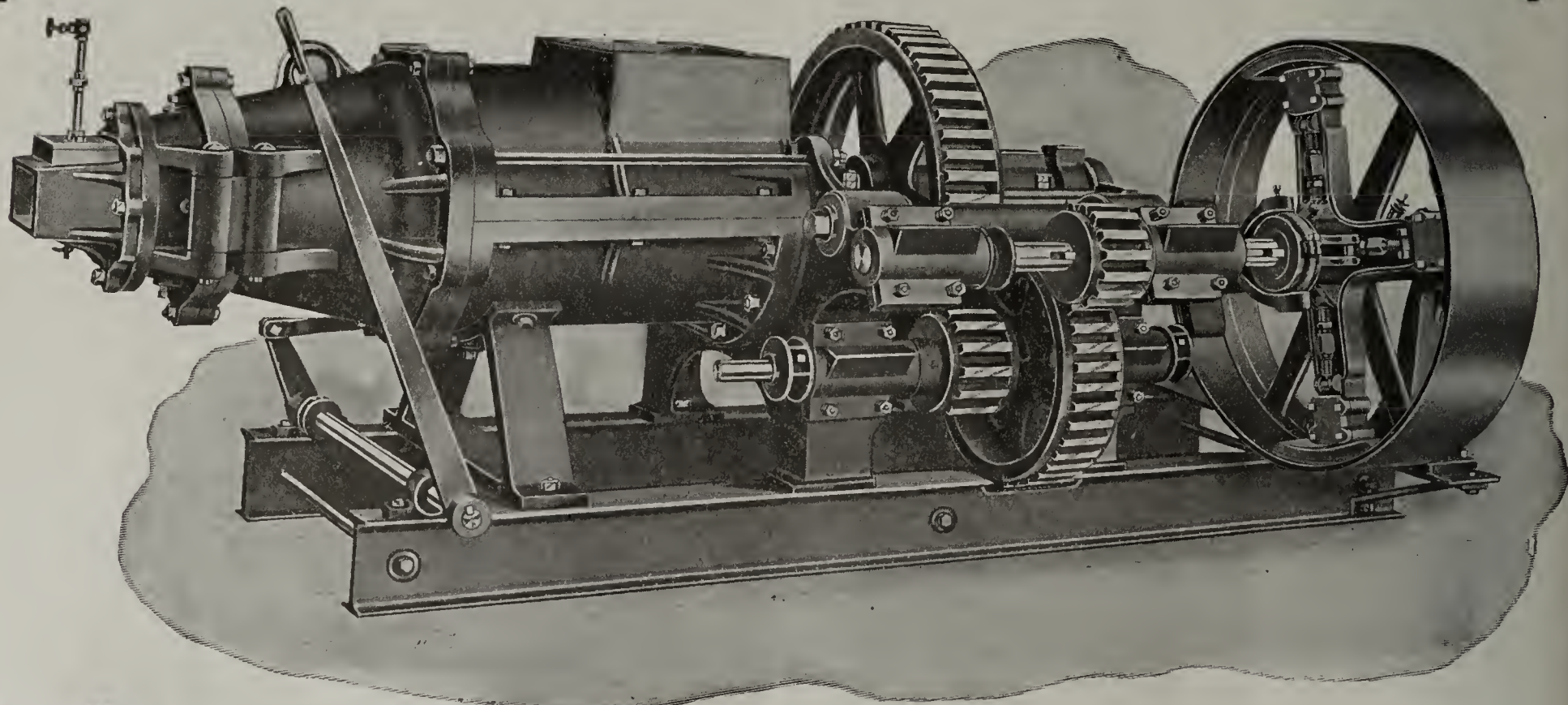


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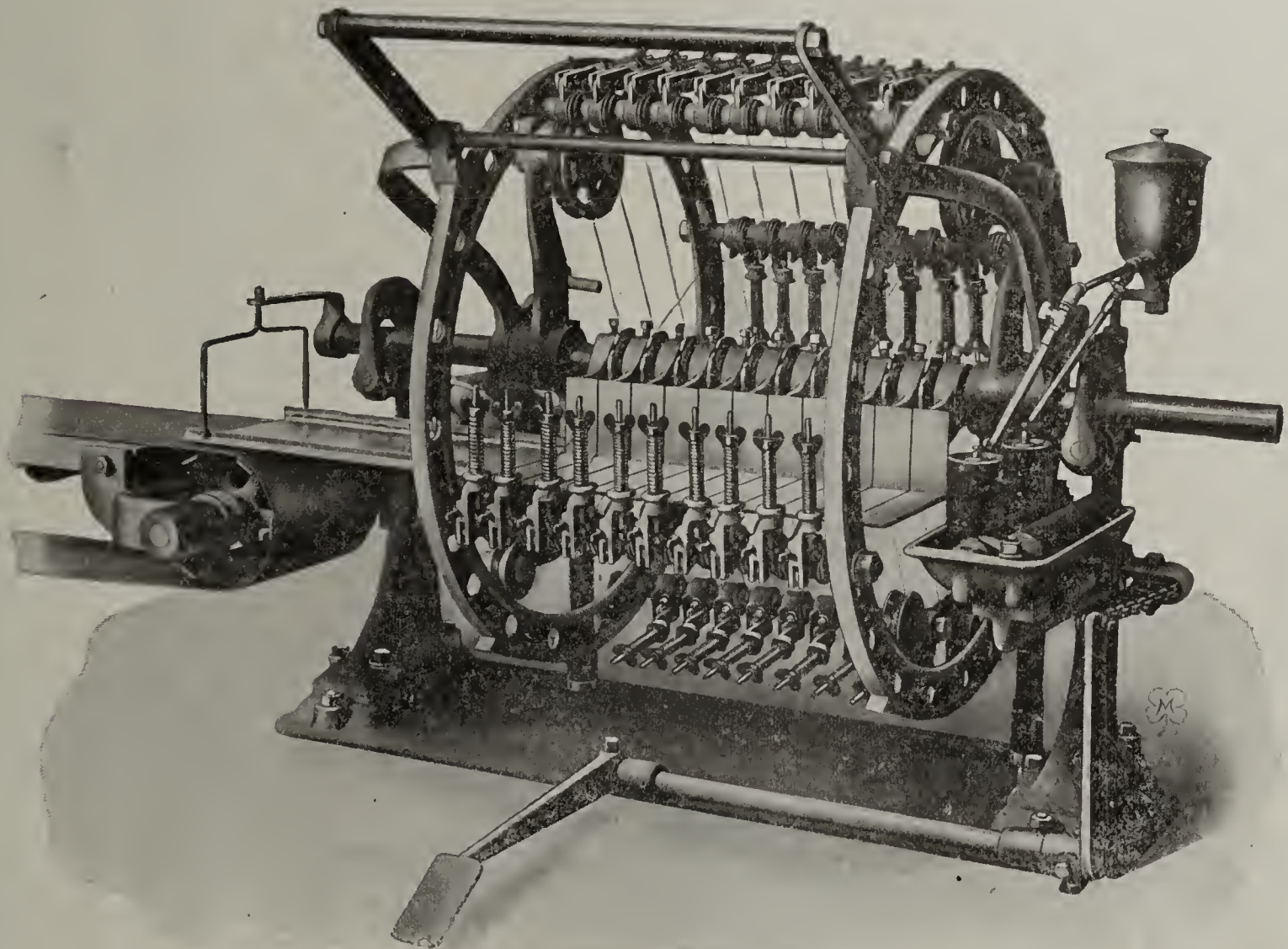


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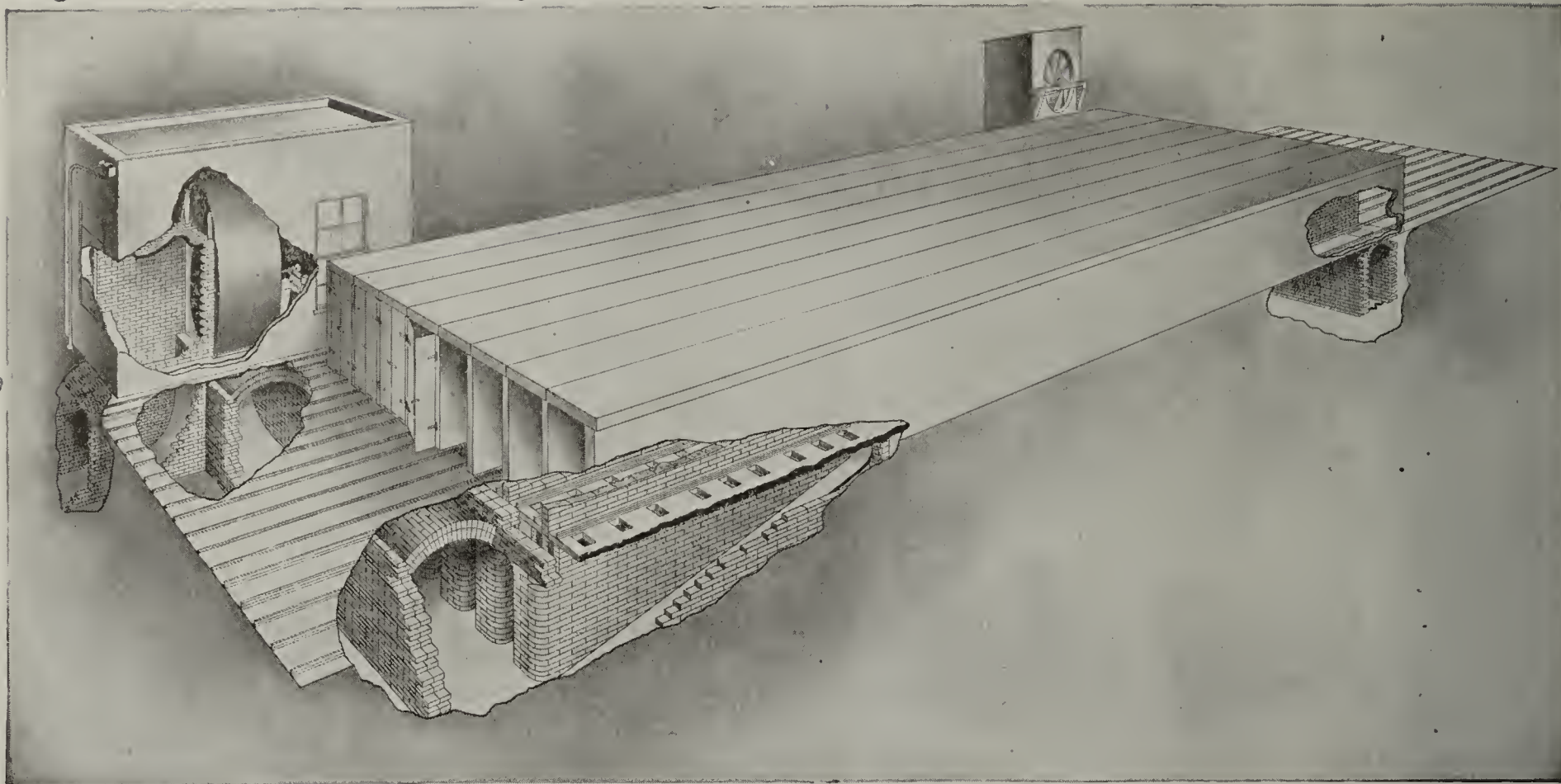
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A practical treatise on the making of hand made, soft mud, stiff clay, dry press, paving brick, enameled brick, fire brick, silica brick, terra cotta, drain tile, roofing tile, art tile, with a description of modern machinery, 662 pages—261 engravings—8 vo., cloth.....\$10.00

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Containing the papers and discussions of the society. The most complete information published. 5 vols. Price, each \$4.00

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This book was compiled with great care and most complete. Price.....\$1.00

Will be sent postpaid on receipt of price.

ADDRESS ORDERS TO CLAY RECORD PUBLISHING COMPANY, 303 DEARBORN STREET, CHICAGO, U. S. A.

A Letter Which Will Interest Brick Makers

ILLINOIS BRICK COMPANY

GEO. C. PRUSSING, PRESIDENT
 A. J. WECKLER, VICE-PRESIDENT
 C. D. B. HOWELL, TREASURER
 WM. SCHLAKE, PURCHASER
 C. B. VER NOOY, AUDITOR
 W. M. LEGNARD, SUPERINTENDENT
 J. H. GRAY, SALES DEPARTMENT

NINTH FLOOR, CHAMBER OF COMMERCE
 PHONE MAIN 17

CHICAGO, Jan. 4, 1907.

The Barron Dryer Co.,
 84 La Salle St., Chicago.

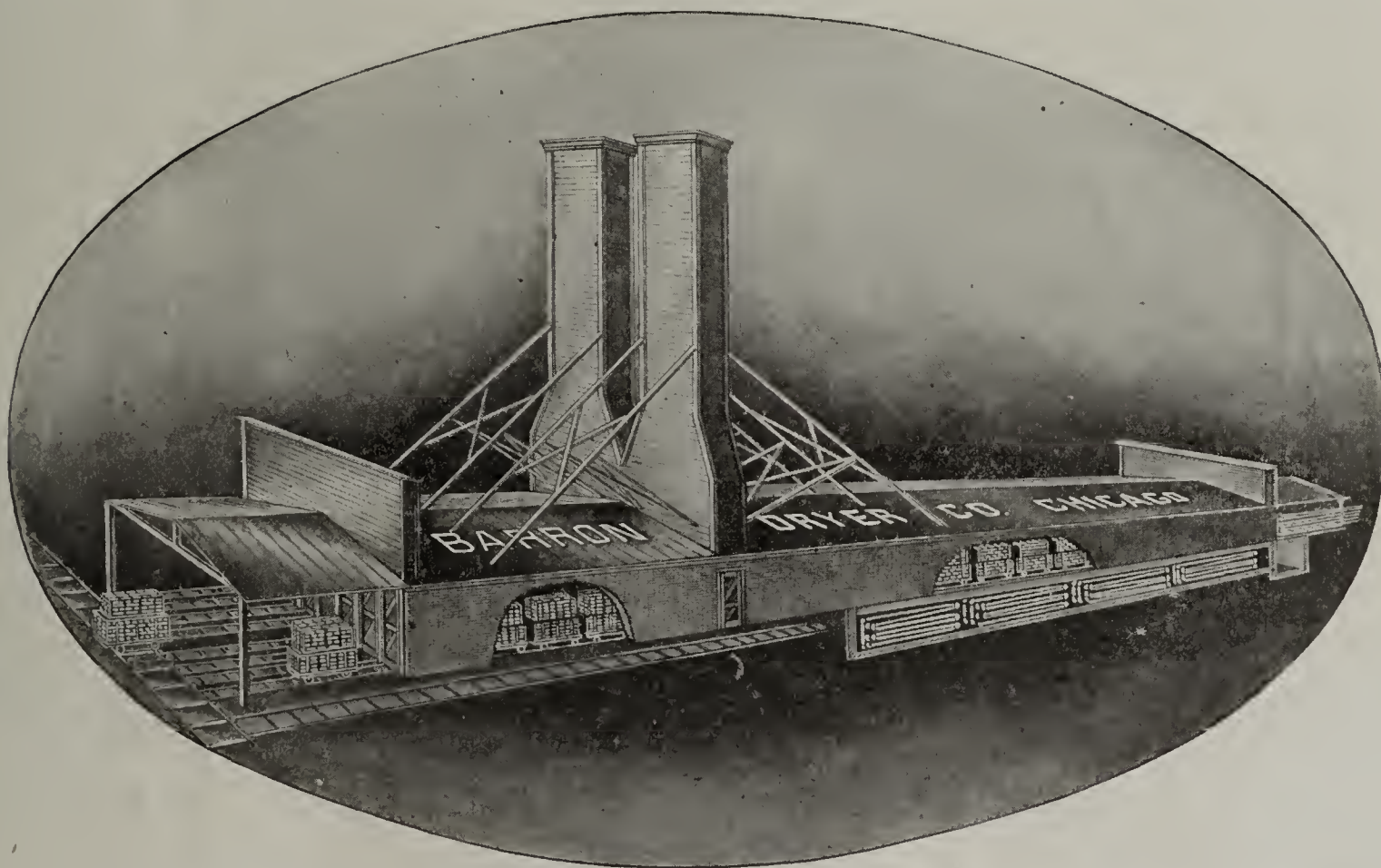
Gentlemen:

It may be of interest to you to know that we have made on our Yard 17, in 1906, 52,551,400 brick, in 2,083 1-2 working hours, and have dried them satisfactorily on your 18 track dryer.

Very truly yours,
 ILLINOIS BRICK COMPANY.

Geo. C. Prussing

President.



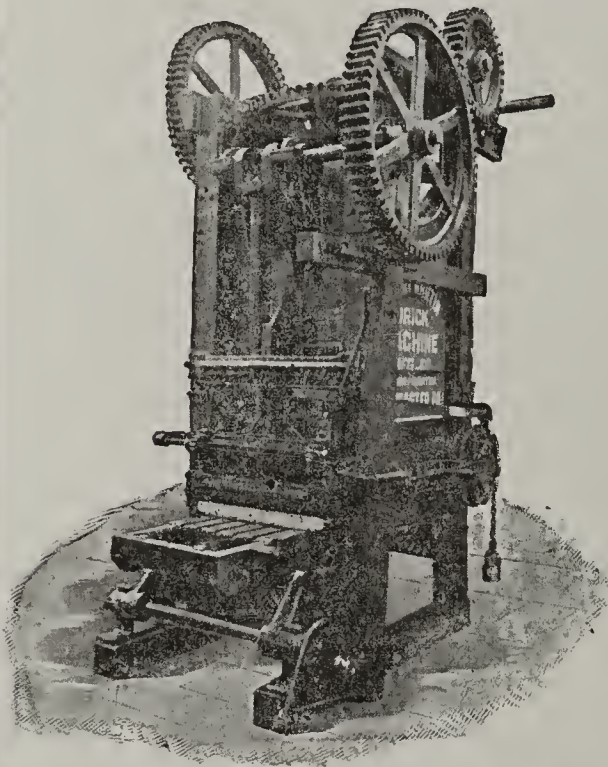
Barron Tender Clay Dryer, Which DOES THE WORK

We construct and install Dryers adapted to drying all clay products with greatest perfection and economy in fuel and labor

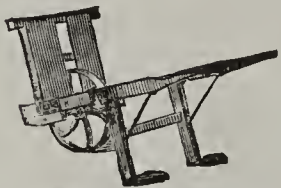
BARRON DRYER CO., 84 La Salle St., CHICAGO, ILL.

CLAY WORKERS

HAVE THOROUGHLY TESTED
THE "MARTIN" MACHINERY



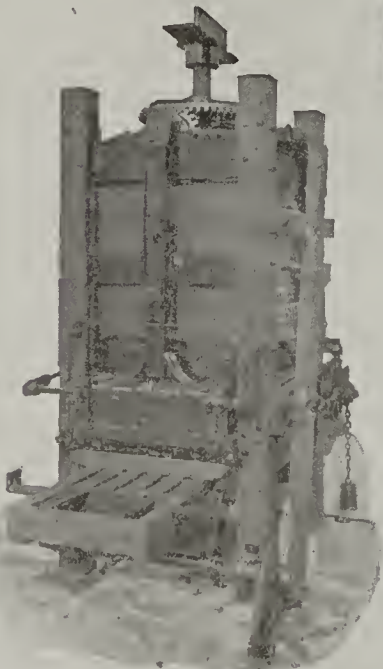
STYLE "A" Brick Machine Have
you seen it Work?



Barrows and
Trucks



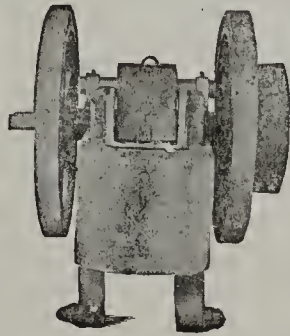
Built for Hard
Work



Horse Power Machine



Don't Over Look Results



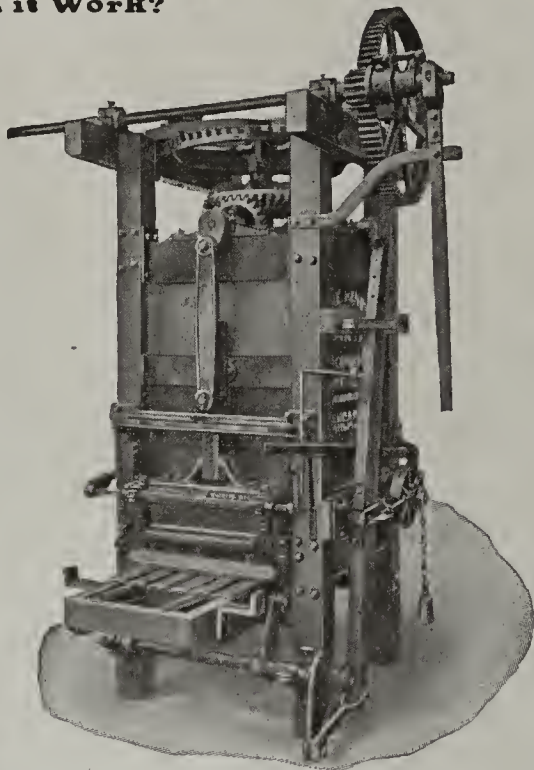
When it comes to



Laying Your Plans for the
betterment
of your
Brick
Plant



Write Us
We
Have What
You
Need



The "MARTIN" famous
Style "B" Steam Power
Brick Machine

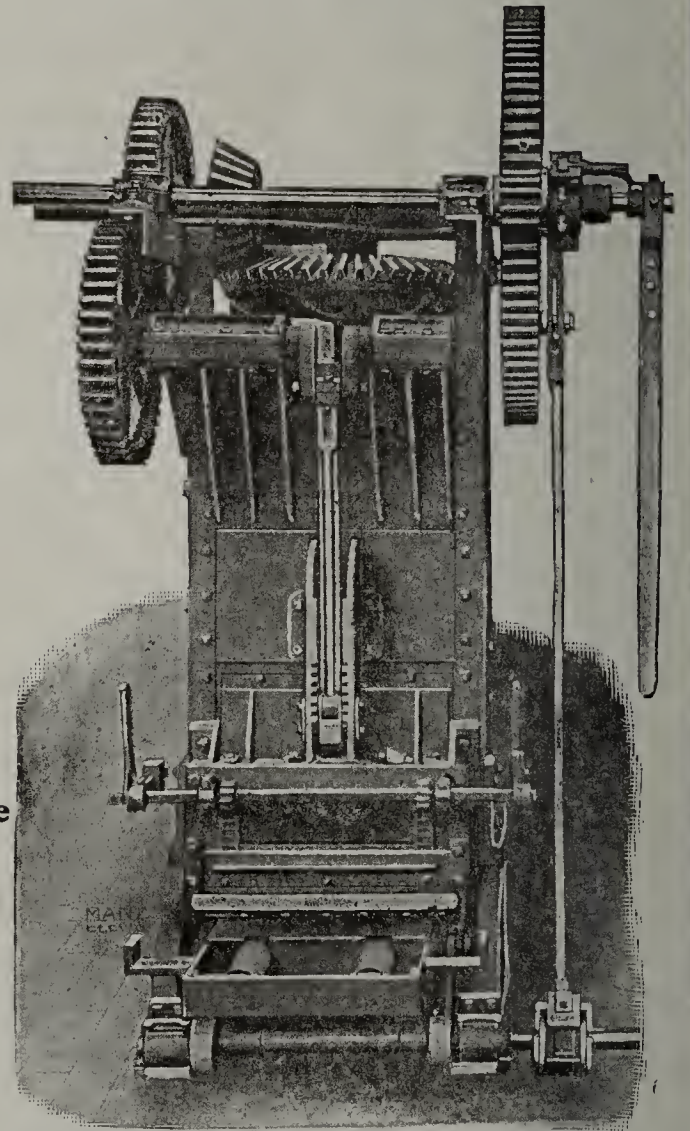
MARTIN - LANCASTER

PENNSYLVANIA

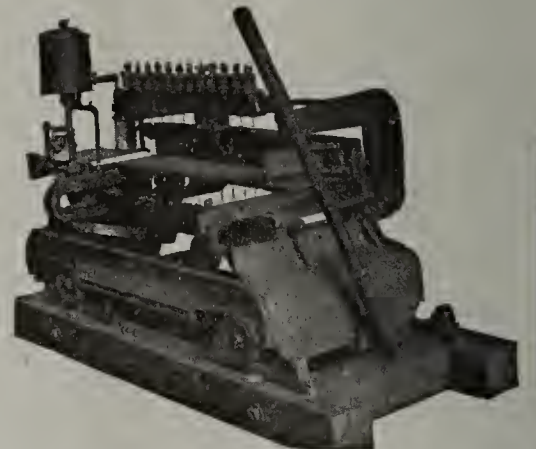
Up-to-Date Brick Yard Builders

The WORLD OVER

IT HAS BEEN PROVEN BEST
BY ACTUAL TESTS



STYLE "P" built of all Iron
and Steel



Cutting Table



Auger Brick Machine

THE "MARTIN" RACK PIPE STEAM BRICK "DRYER SYSTEM"



PATENTED

February, 22d, 1898, No. 599509
October 10, 1905, No. 95520
November 14, 1905, No. 804489



This Dryer, and the design in arranging it, are under the protection of the United States Government by virtue of patents granted. Patents have also been taken out in all the principal foreign countries. We are the sole owners and control these important patents and have authorized NO ONE to manufacture or sell the "MARTIN"

RACK PIPE STEAM BRICK DRYERS

NO
TRUCKERS
AND
CAR
PUSHERS
NEEDED



LABOR
SAVING
THROUGHOUT

ADAPTED FOR SOFT-MUD OR STIFF-MUD BRICK

SUPERIOR IN EVERY RESPECT TO ANY OTHER SYSTEM—Labor Saving Throughout. Dispenses with Truckers and car Pushers. Pallets Automatically Return to Brick Machine. Quick to install and low in price, and takes up very little Yard room.

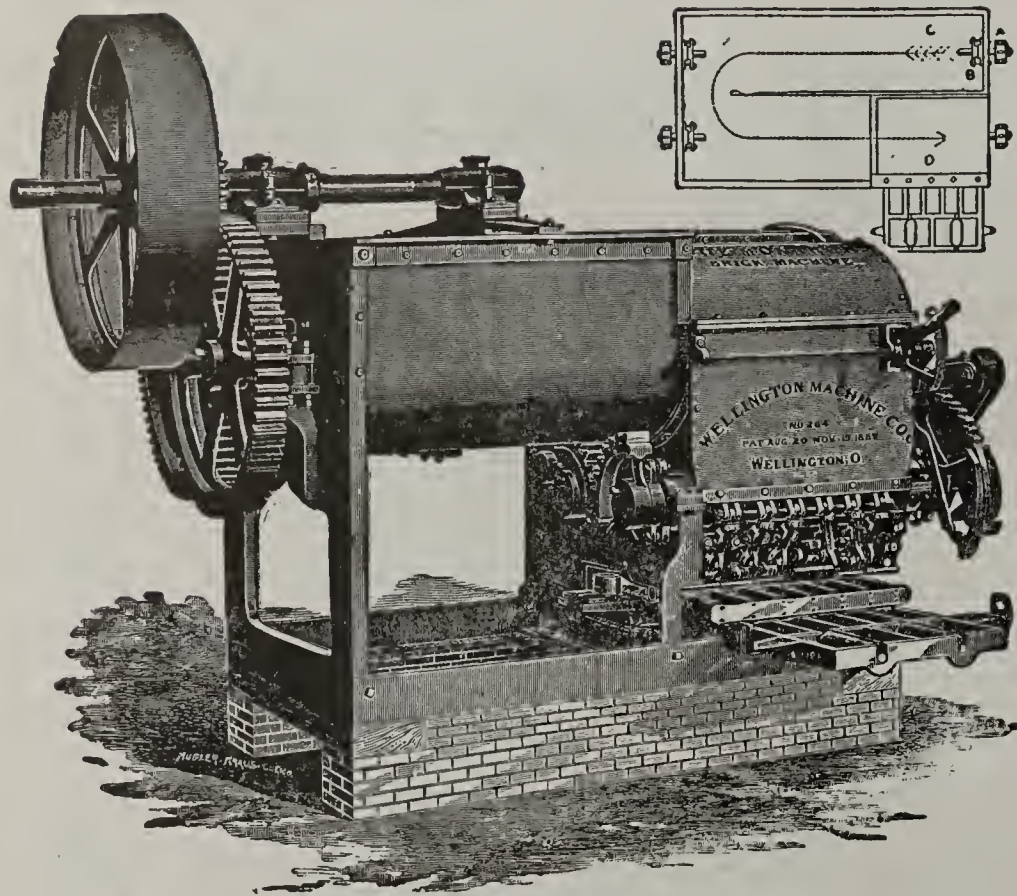
The sale and construction of the "Martin" Rack Pipe Steam Brick Dryer is under the direct supervision of the Factory Office at Lancaster, Pa.

FOR FURTHER INFORMATION, ADDRESS

THE HENRY MARTIN BRICK MACHINE MFG. CO., Inc.

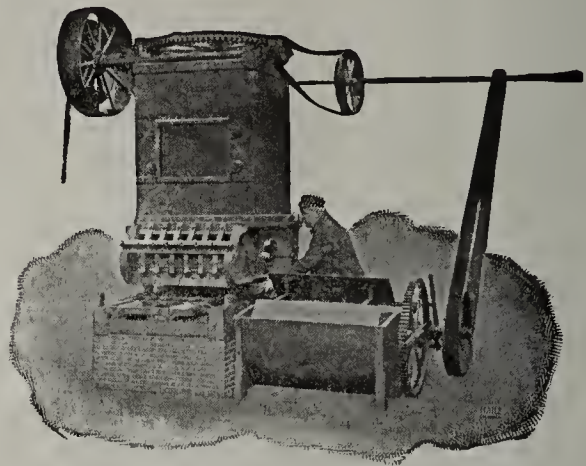
LANCASTER, PA., U. S. A.

BRICK and TILE MACHINERY



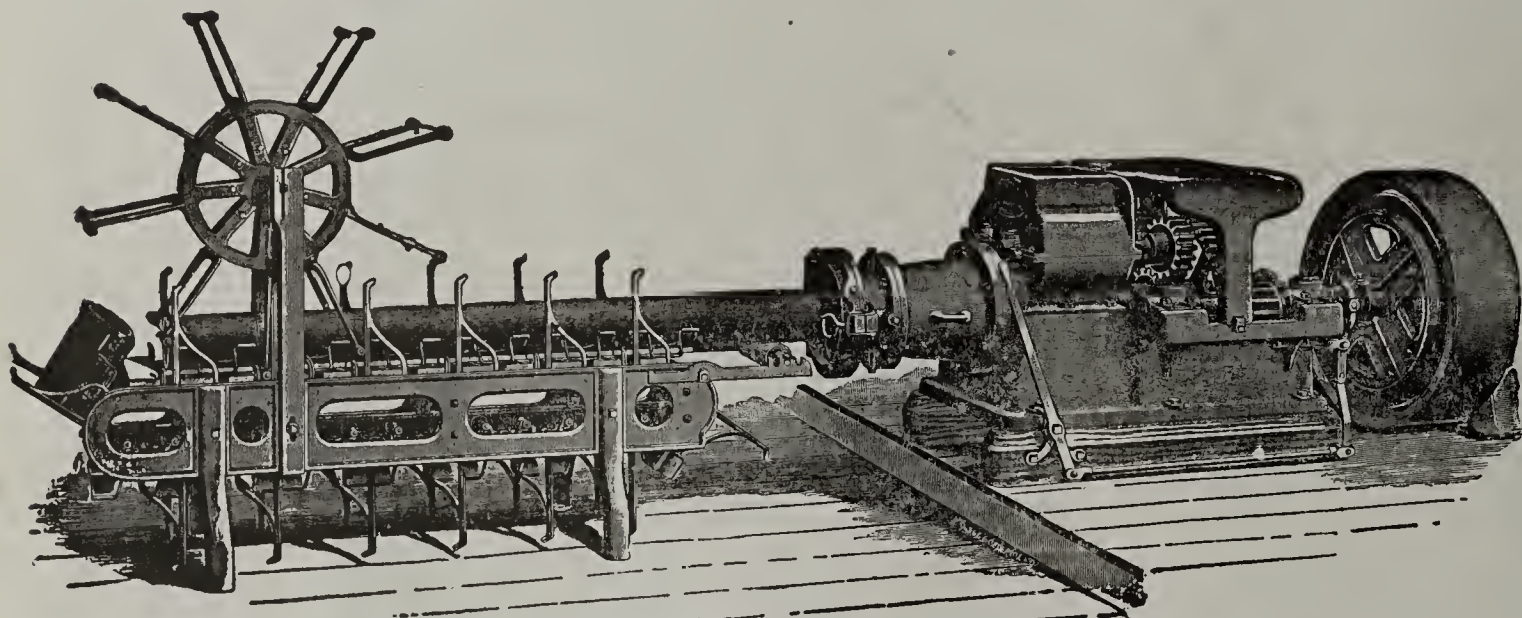
MONARCH STOCK BRICK MACHINE

Capacity, from 80,000 to 50,000



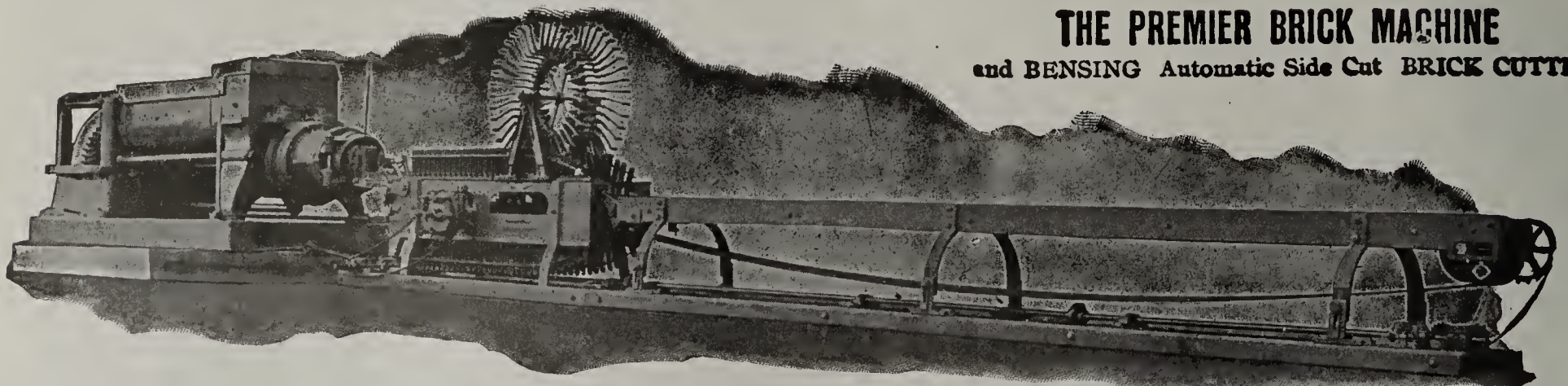
THE QUAKER

Horse or Steam Power. Capacity, 20,00 to 35,000



BRICK OR TILE MACHINE WITH AUTOMATIC TABLE

**"We
Fulfill
our
Guarantees."**

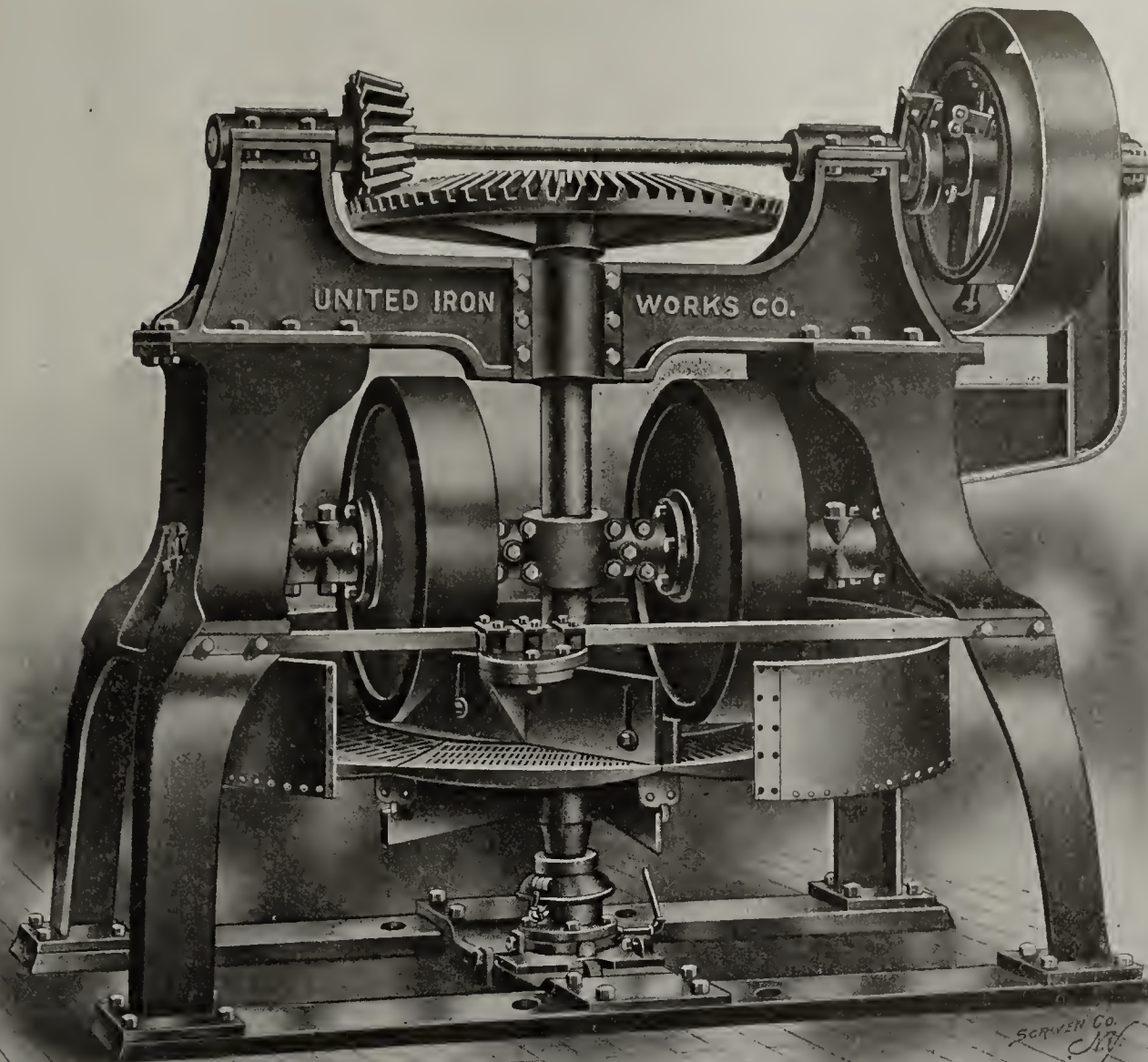


THE PREMIER BRICK MACHINE

and BENSING Automatic Side Cut BRICK CUTTER

We have a full line of Clay-Working Machinery, sand mold brick machines, auger brick and tile machines, Automatic side and end cut tables, dies, molds, barrows, trucks, sanders, represses, pug mills. *The only down cut, reel side brick cutter on the market for cutting face brick that do not require repressing.* We can guarantee to make you a better face brick with this cutter than you can get from any other cutter on the market.

B. E. LaDOW, - - Fredonia, Kansas.



**Here's What One of the Largest Cement Companies in the United States
Says About our "Pittsburg" Dry Pan:**

"Answering yours of the 19th instant; We are pleased to state that the dry pan which we purchased of you about a year ago has given entire satisfaction. We consider it one of the best, if not the best, dry pan manufactured and shall, indeed, be pleased to recommend it to prospective purchasers of such machinery.

Yours truly,

WESTERN STATES PORTLAND CEMENT CO."

And they Backed up their statement by ordering recently THREE MORE Pans from us

UNITED IRON WORKS COMPANY

General Offices: SPRINGFIELD, MO.

SPRINGFIELD, MO.; AURORA, MO.; IOLA, KAS.; PITTSBURG, KAS.
CHERRYVALE, KAS.; KANSAS CITY, MO.

ALL OVER THE WORLD

THESE FAMILIAR SIGNS
MARK SINGER SHOPS

ALL OVER THE WORLD



THE ONLY SHOP WHERE
Singer & Wheeler & Wilson

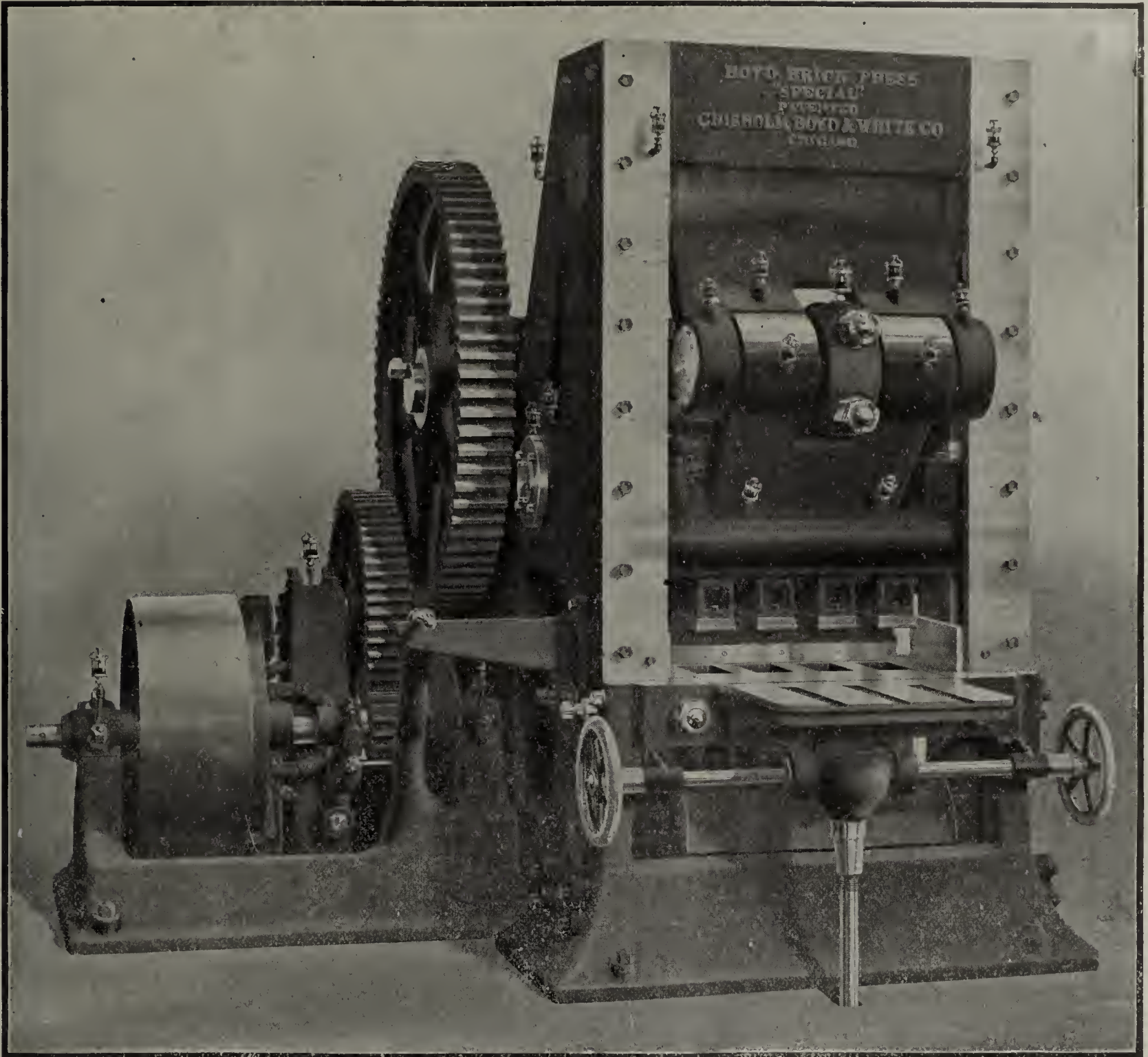
SEWING MACHINES ARE
SOLD RENTED OR EXCHANGED

SEE SINGER STORE

IN YOUR OWN CITY

THE BOYD BRICK PRESS

FOUR - MOLD "SPECIAL"



THE BOYD BRICK PRESS exerts greater pressure, holds it longer, puts more clay into brick, and makes stronger brick than any other Brick Press made. Especially adapted for working shales, and is the only successful machine for making fire brick.

ALL BOYD PRESSES are fitted with our IMPROVED PATENTED MOLD BOX, the liners of which are made of the hardest and toughest known metal, which can be reground at low cost when worn. The molds can be changed in a few minutes.

ITS RECORD: More Boyd Presses in actual operation than of all other Press Brick Machines combined. Write for Catalogue.

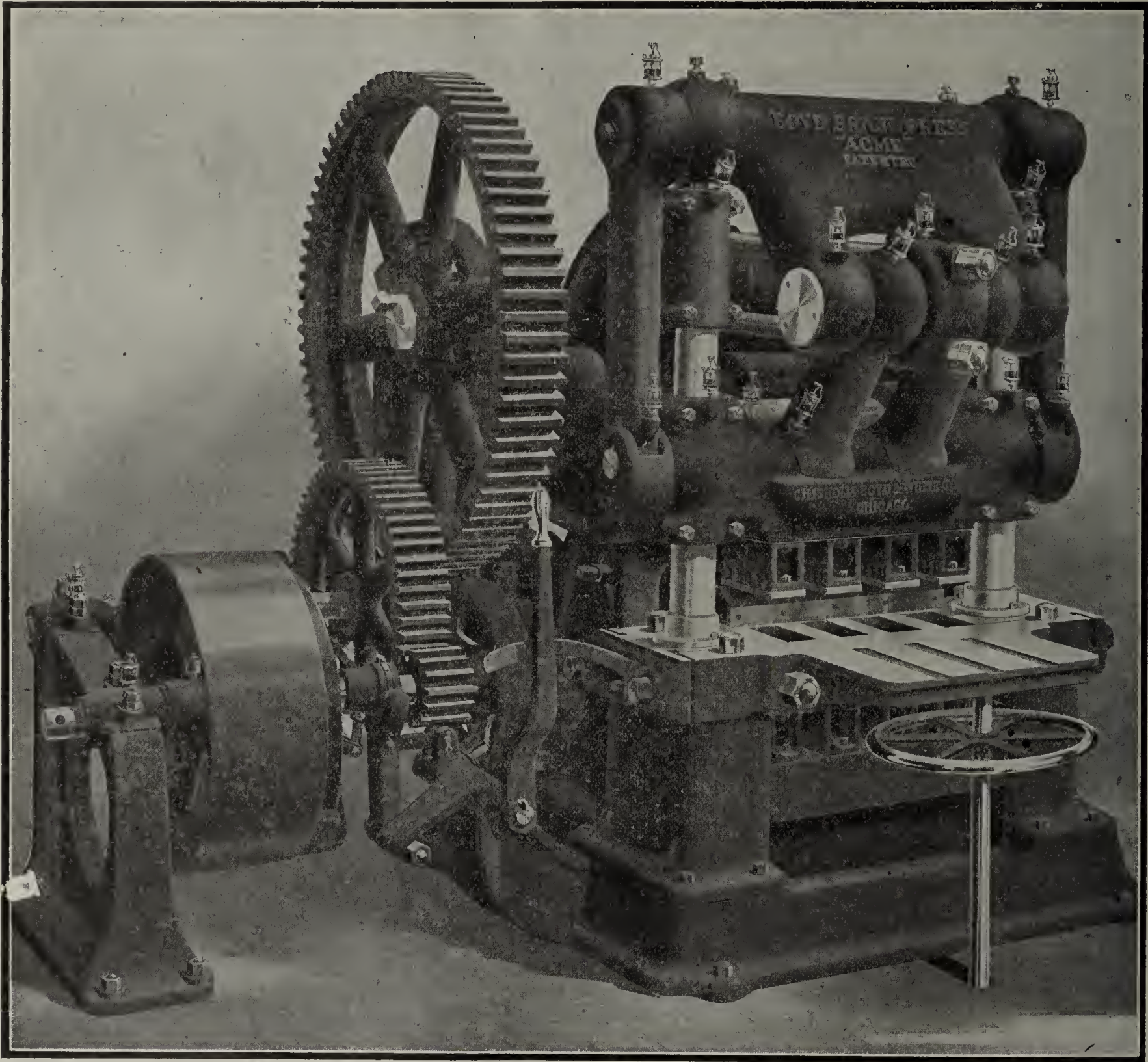
Chisholm, Boyd & White Co.,

OFFICE AND WORKS: 57th and WALLACE STREETS

Chicago, Illinois

THE BOYD BRICK PRESS

FOUR - MOLD "ACME"



IT'S NAME A GUARANTEE. The FOUR-MOLD PRESS above illustrated is our latest improved machine of this design. Over ONE HUNDRED now in use. Especially adapted for working shales.

A BUSINESS PROPOSITION

We will send to any responsible party a BOYD BRICK PRESS ON TRIAL and subject to purchase after the making and burning of one or more kilns of brick. We take the machine back if not satisfactory. We design and equip brick plants complete. Correspondence Solicited.

Chisholm, Boyd & White Co.

OFFICE AND WORKS: 57th and WALLACE STREETS

Chicago, Illinois

SAND-LIME BRICK MACHINERY

BOYD QUALITY

MODERN METHODS



NO EXPERIMENTING

More Boyd Presses making sand-lime brick than any other press on the market. The Boyd Press is selected and purchased by those who want the best. Our "Special" Combination Block and Brick Press is the only successful machine in the world for making large building blocks and stones.

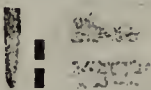
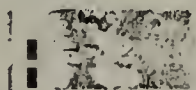
Sand-Lime Brick Plants designed and complete machinery equipment furnished, installed and set in operation. Machinery and product guaranteed.

Correspondence solicited.

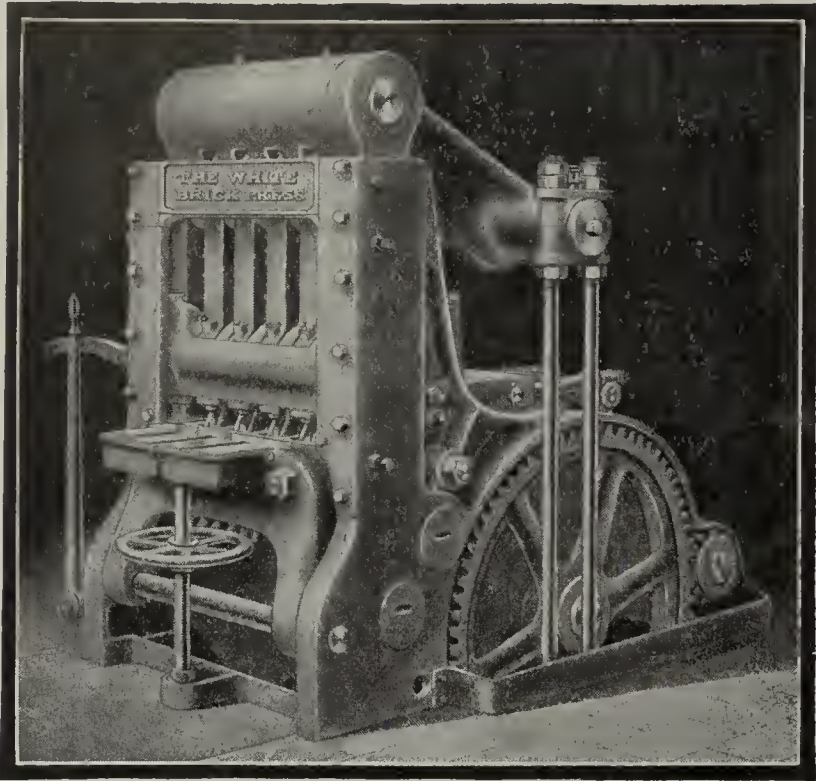
CHISHOLM, BOYD & WHITE COMPANY

OFFICE AND WORKS, 57th AND WALLACE STREETS

CHICAGO



ILLINOIS



New White Press

Especially designed for making Sand-Lime Brick. Strongest, Most Powerful, Most Durable, and Most Convenient. Molds removable; can be changed in seven minutes.

Send for Special Press Catalogue.

SAND-LIME BRICK

Complete Plants installed, started and operated until the first 100,000 brick are made. No risks, delays or expensive experimenting.

Strongest possible guarantees. This is the *Only Safe Method* for parties going into any new industry.



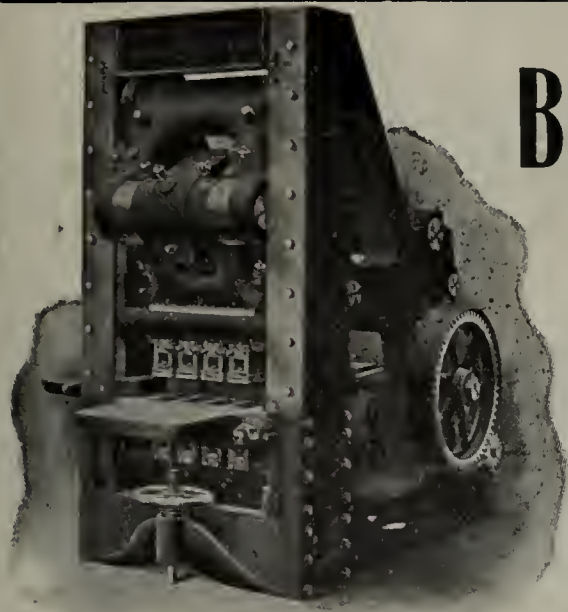
Our Latest
Illustrated Booklet
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AMERICAN SAND-LIME BRICK CO.

1308 GREAT NORTHERN BLDG., CHICAGO

BERG BRICK PRESS

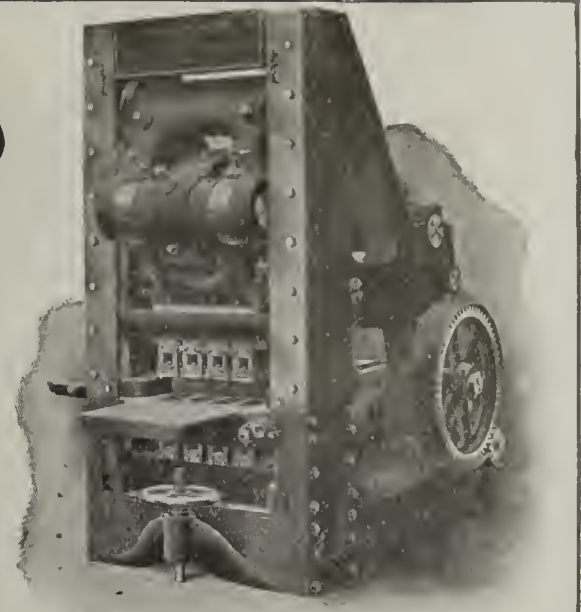
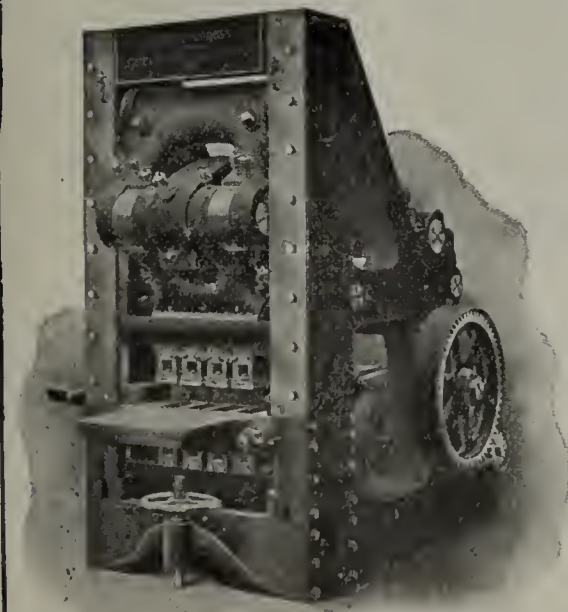
The highest development of the Art of Brickmaking Machinery so pronounced by the United States Government.



The BERG for the highest grade of pressed brick of shale or clay. It makes all kinds of shapes and sizes of brick. Changes from one shape to another can be made in less than an hour's time.

First-Class Workmanship. Cut Gearing. Fully Warranted.

The BERG makes the **best** sand-lime brick and cheapest because it is the strongest machine and gives the highest pressure. Thirty-five sand-lime plants in United States use the BERG Brick Press SUCCESSFULLY.



The BERG MAKES the highest grade of fire brick. Can make all kinds of shapes desired for fire-brick purposes.

Three distinct pressures make the brick evenly pressed all through. No granulated centers of the brick.

The BERG is the **best** for sand and cement because of its strong pressure. Uses less ce-

ment, makes cheaper brick.

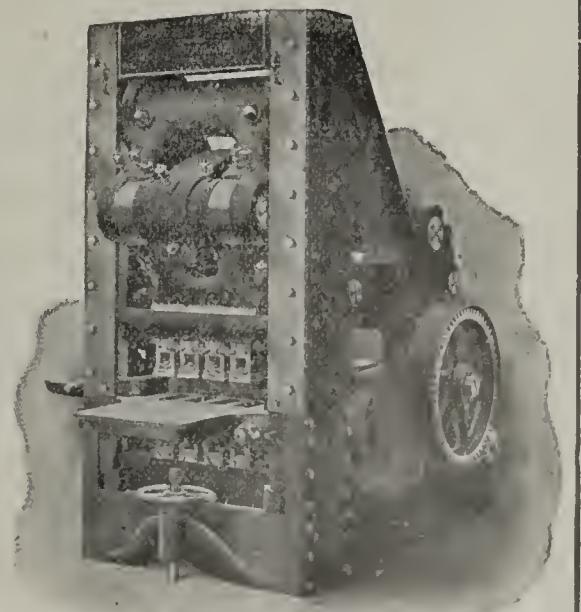
The 1905 Berg Press

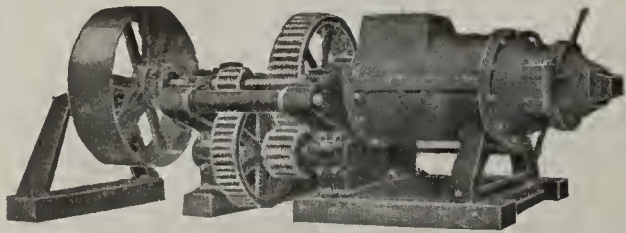
Many other steps further forward in improvement and highest grade of material and workmanship, also cut gearing. Fully guaranteed as to its success. Manufactured by its inventor in Toronto, Canada, exclusively. Plans and specifications on the different kinds of plants furnished, also all equipments.

For prices and full particulars, address

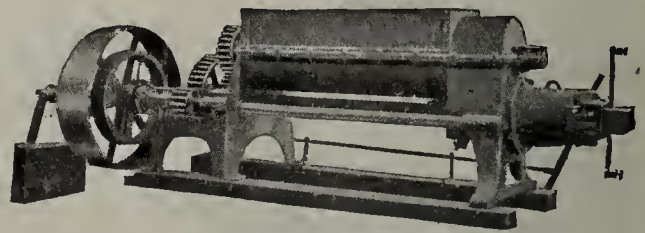
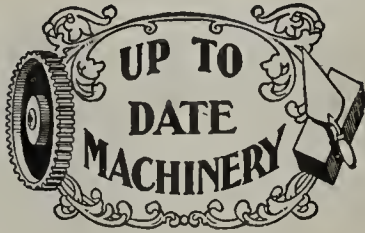
A. BERG & SONS

OFFICE: MANNING CHAMBERS
TORONTO, ONT., CANADA





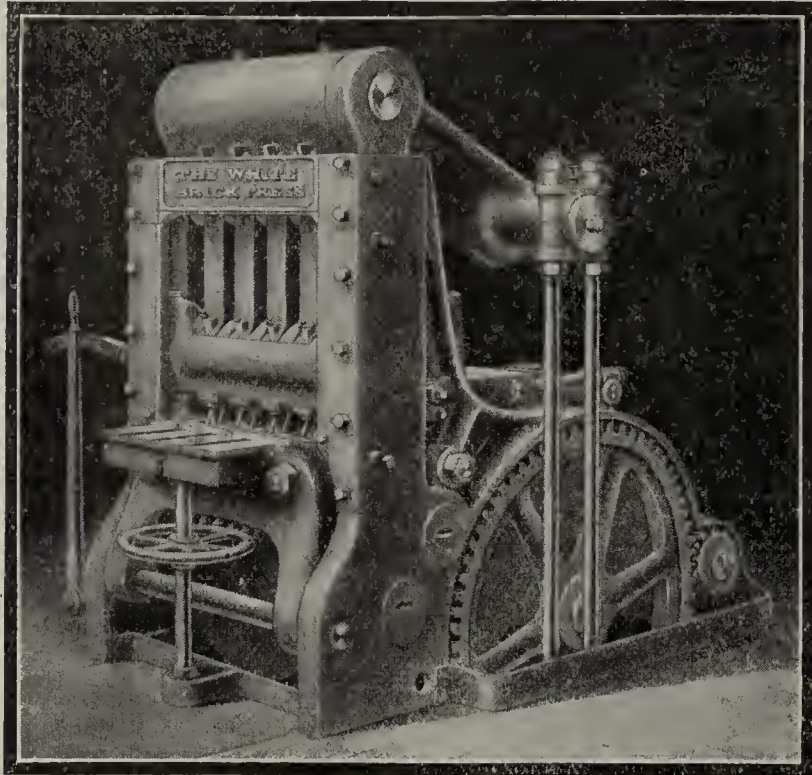
Auger Machine



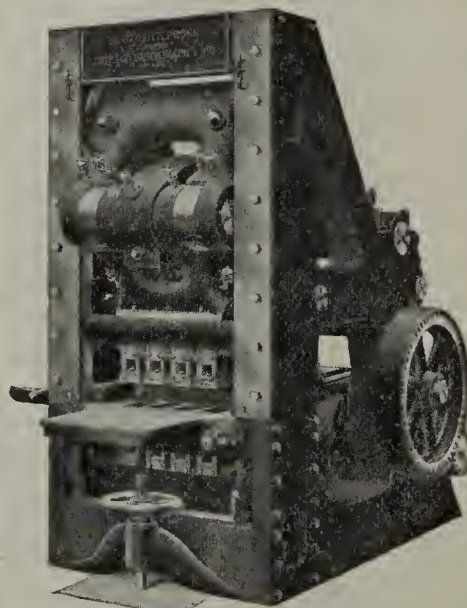
Combination Machine

UP=TO=DATE MACHINERY

For Making all Kinds of Brick—
**Dry Pressed, Wire Cut,
Sand Moulded**



New White Press



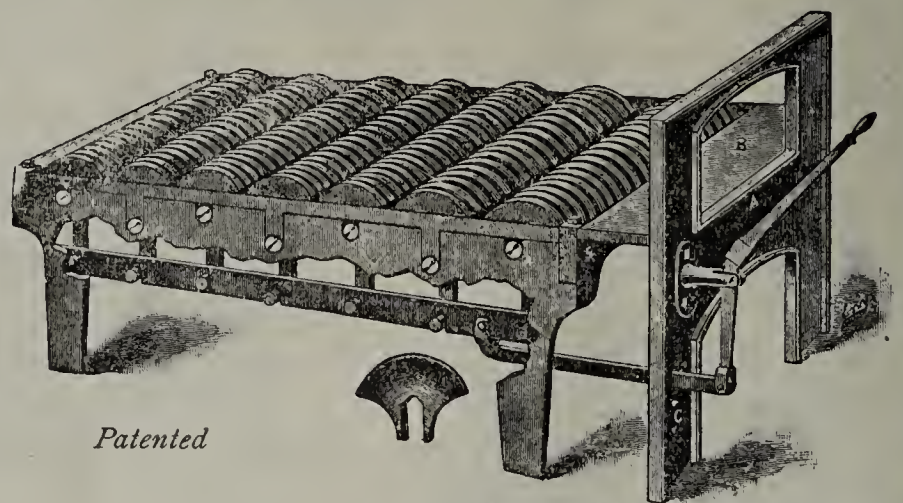
New Model Berg Press

**Full
Line of
Brickyard
Specialties
and
Supplies**

In addition to our well known BERG PRESS, we are now bringing out our new WHITE PRESS for clay-brick work. It is especially recommended for difficult and refractory clay. By far the most powerful press built. Removable molds, changed in SEVEN minutes. Special catalogue and full particulars on application.

Something New for 1907

Rocking and Dumping Grates for Kilns. Save coal, save labor, and do away with checked brick. Send for "Lecture on Combustion," by [His Satanic Majesty.



Patented

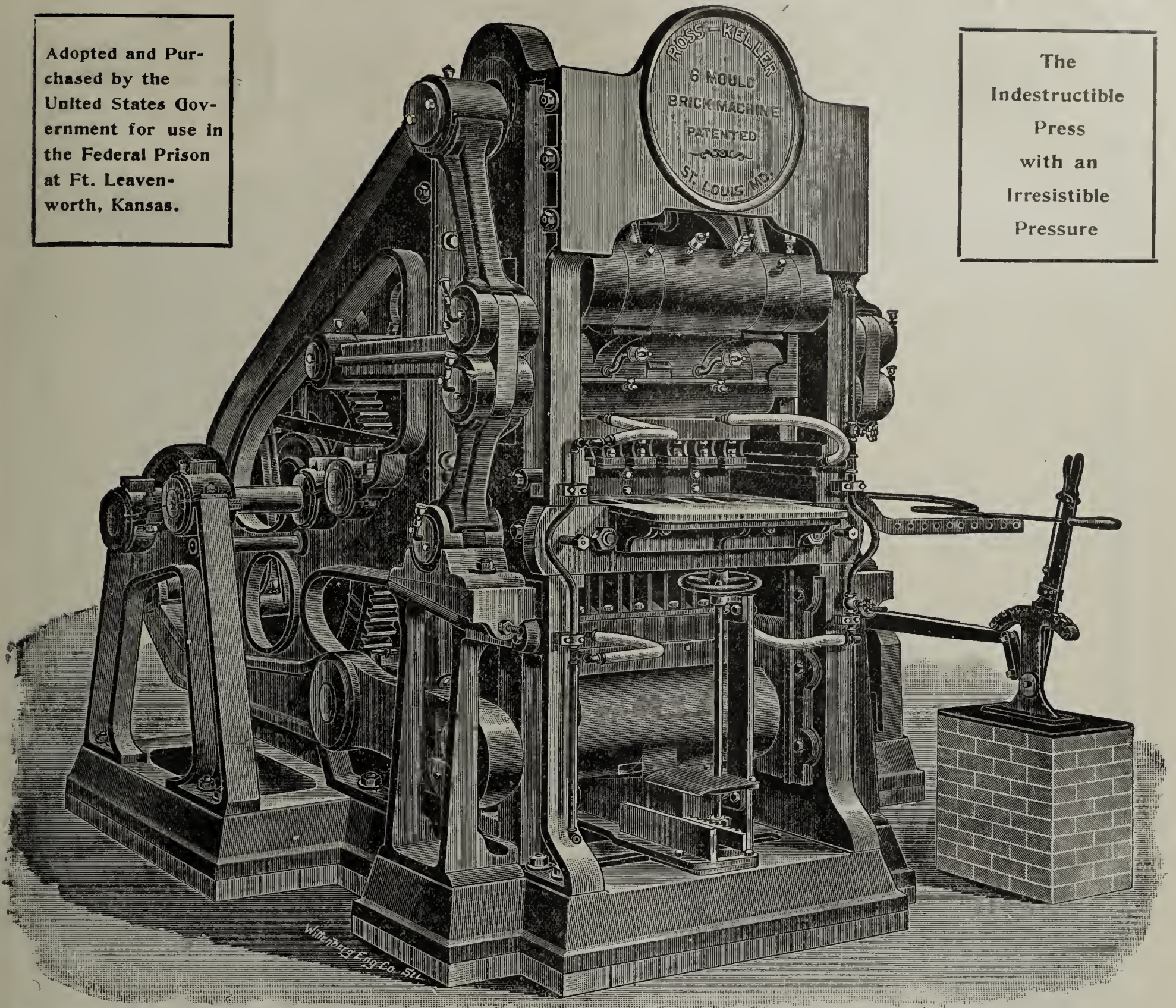
U. S. SELF CLEANING GRATE
In position ready for use. Part of frame cut away to show connection below.

Chicago Brick Machinery Co.

1308 Great Northern Bldg.

Adopted and Purchased by the United States Government for use in the Federal Prison at Ft. Leavenworth, Kansas.

The Indestructible Press with an Irresistible Pressure



WE BUILD

Sand-Lime Brick Plants, Shale and Clay Brick Plants

ARE ALSO SOLE MANUFACTURERS OF THE

Ross-Keller Triple Pressure Brick Press

The strongest and most efficient Brick Machine made, and the only Press that gives three distinct pressures to the brick

ROSS-KELLER TRIPLE PRESSURE BRICK MACHINE CO.

OFFICES FULLERTON BUILDING,

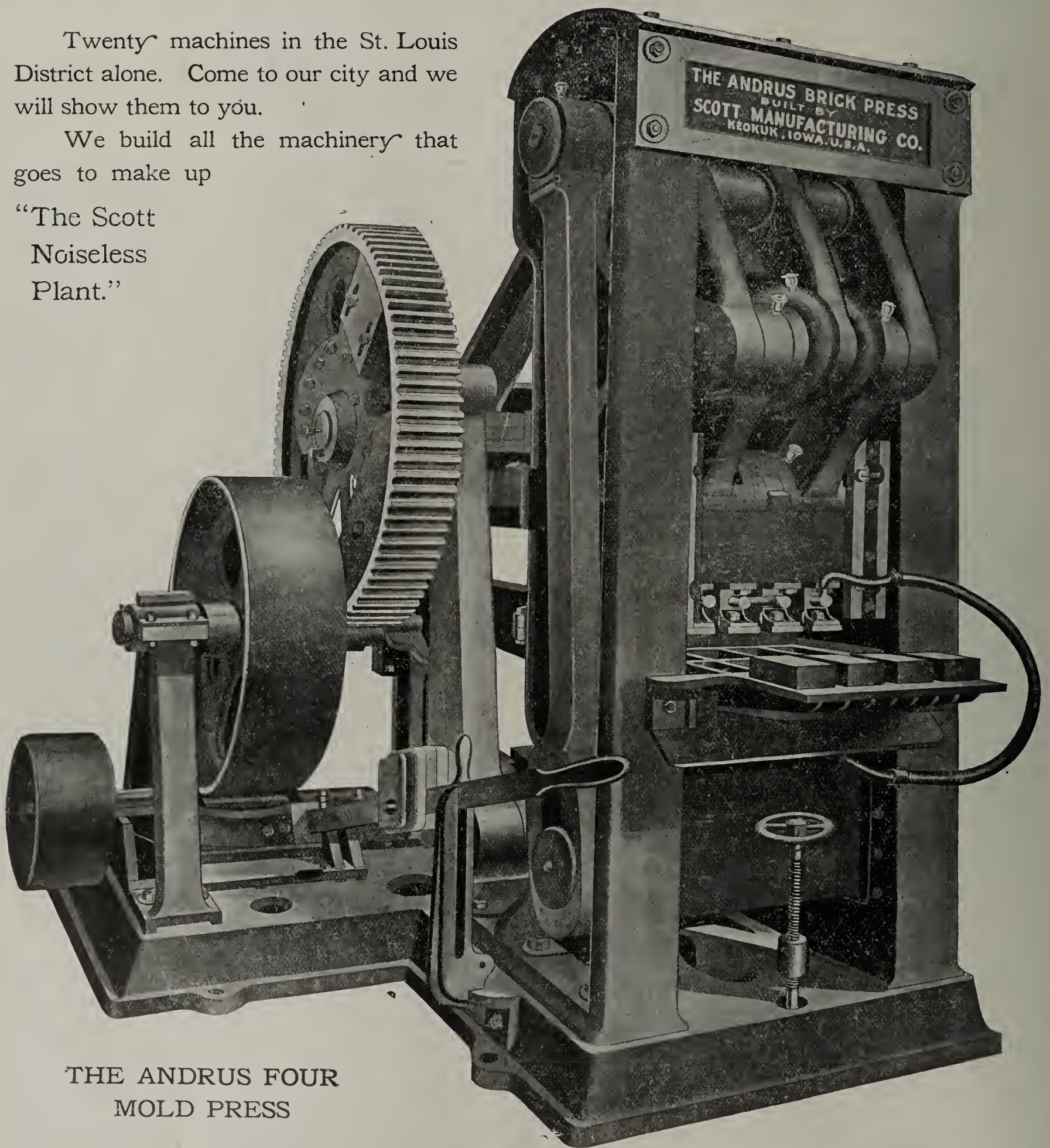
ST. LOUIS, MO.

This is the Press That Scott Builds

Twenty machines in the St. Louis District alone. Come to our city and we will show them to you.

We build all the machinery that goes to make up

"The Scott
Noiseless
Plant."



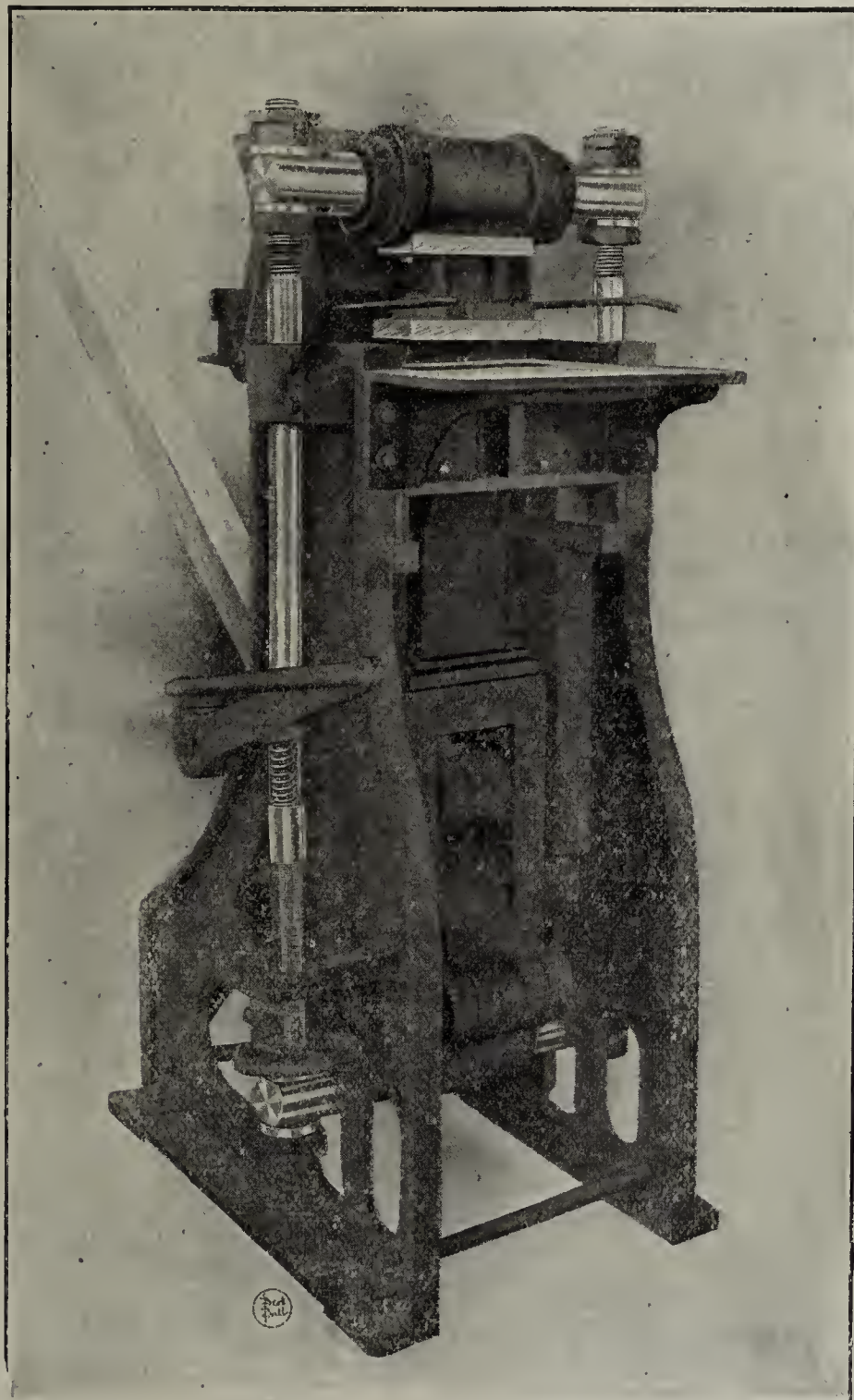
THE ANDRUS FOUR
MOLD PRESS

SCOTT MANUFACTURING CO.

602 Commonwealth Trust Building :: St. Louis, Mo.

THE FERNHOLTZ BRICK MACHINERY CO.

MANUFACTURERS OF
DRY PRESSES, PULVERIZERS, MIXERS, ETC.



FOR
**CLAY
 AND
 SHALE
 BRICKS**



FOR
**CEMENT
 AND
 SAND-
 LIME
 BRICKS**



This Hand Press makes Brick equal in density to those made on a power press.
 Every Brick *PERFECT*. Extensively used for ornamental and special design.

The Fernholtz Brick Machinery Co.

BOYLE AND OLD MENCHESTER, ST. LOUIS, MO.

DRY PRESS BRICK MACHINES

RELIANCE DRY PRESS THE MACHINE OF THE FUTURE

OLD STYLE TOGGLE MOVEMENTS SUPERCEDED BY NEW
AND BETTER PRINCIPLES

THE ONLY MACHINE not using the Toggle Movement.

THE ONLY MACHINE applying Pressure from the Button.

THE ONLY MACHINE making a Uniformly Pressed Brick.

THE ONLY MACHINE MAKING BRICK WITHOUT GRANULATED CENTERS.

Every Brick is a Face Brick. 4 Mold Press 20000 per day. 6 Mold Press 30000 per day.

Adjustment permits any pressure desired, (A Feature peculiar to the *Reliance*.)

Cheapest because having fewest parts. (Also cheapest to keep in repair.)

S I M P L E
S T R O N G
E F F I C I E N T

WRITE TO-DAY FOR PARTICULARS.

SEND US A SAMPLE OF YOUR CLAY.

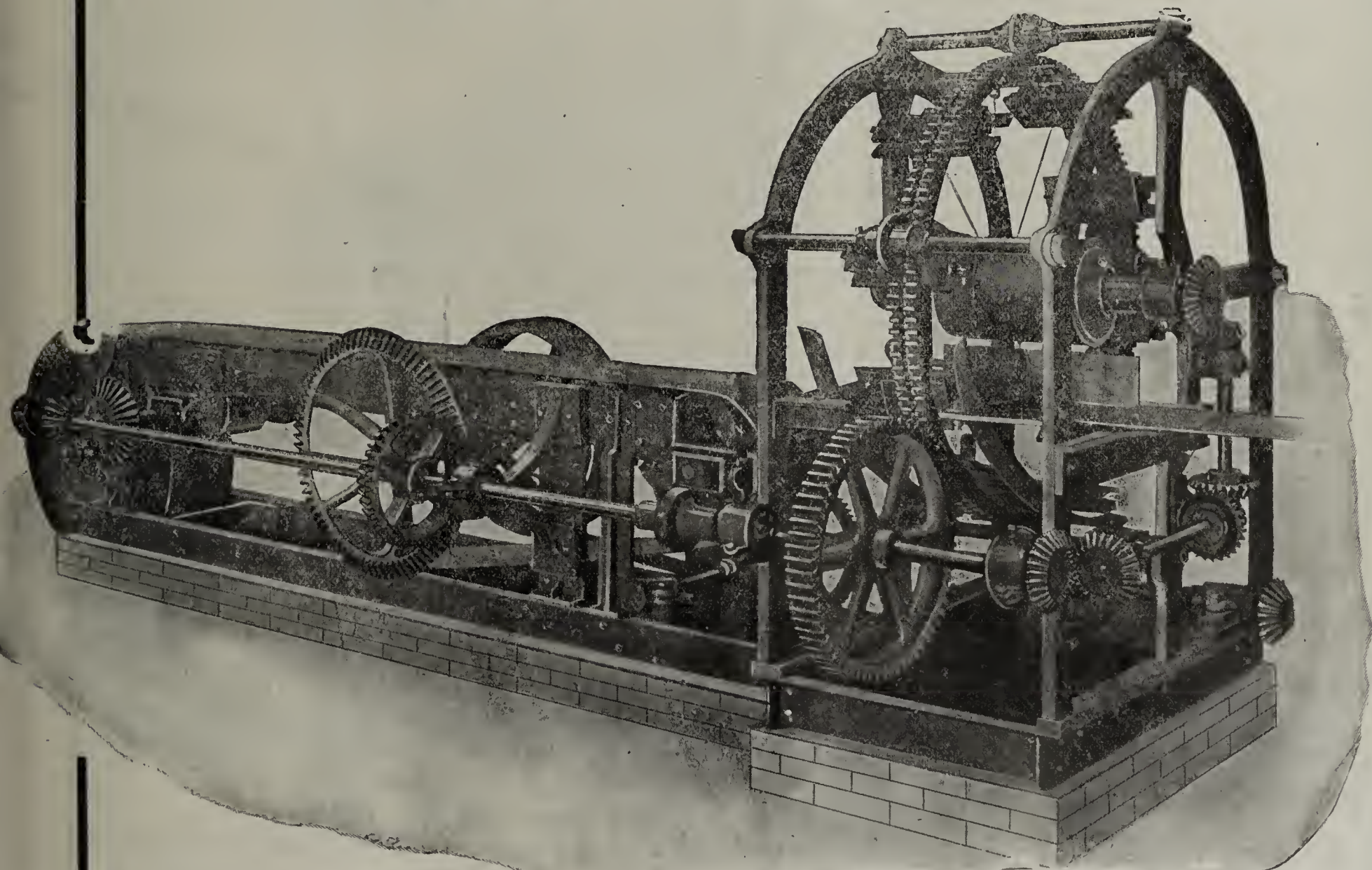
ADDRESS

THE RELIANCE MACHINE AND TOOL WORKS
ST. LOUIS, MO.

ARE YOU INTERESTED IN A CUTTER THAT WILL DOUBLE YOUR PROFITS FOR 1907?

The Hix "Happy Thought" Automatic Cutter will do it. This Cutter is without an equal as it does what others can not do. Will cut end or side cut brick, hollow blocks or conduits any length or size desired. The capacity is unlimited. No clay wasted, every brick a perfect one, no complicated machinery to get out of order and give annoyance.

It Will Pay You to Write Us for Particulars



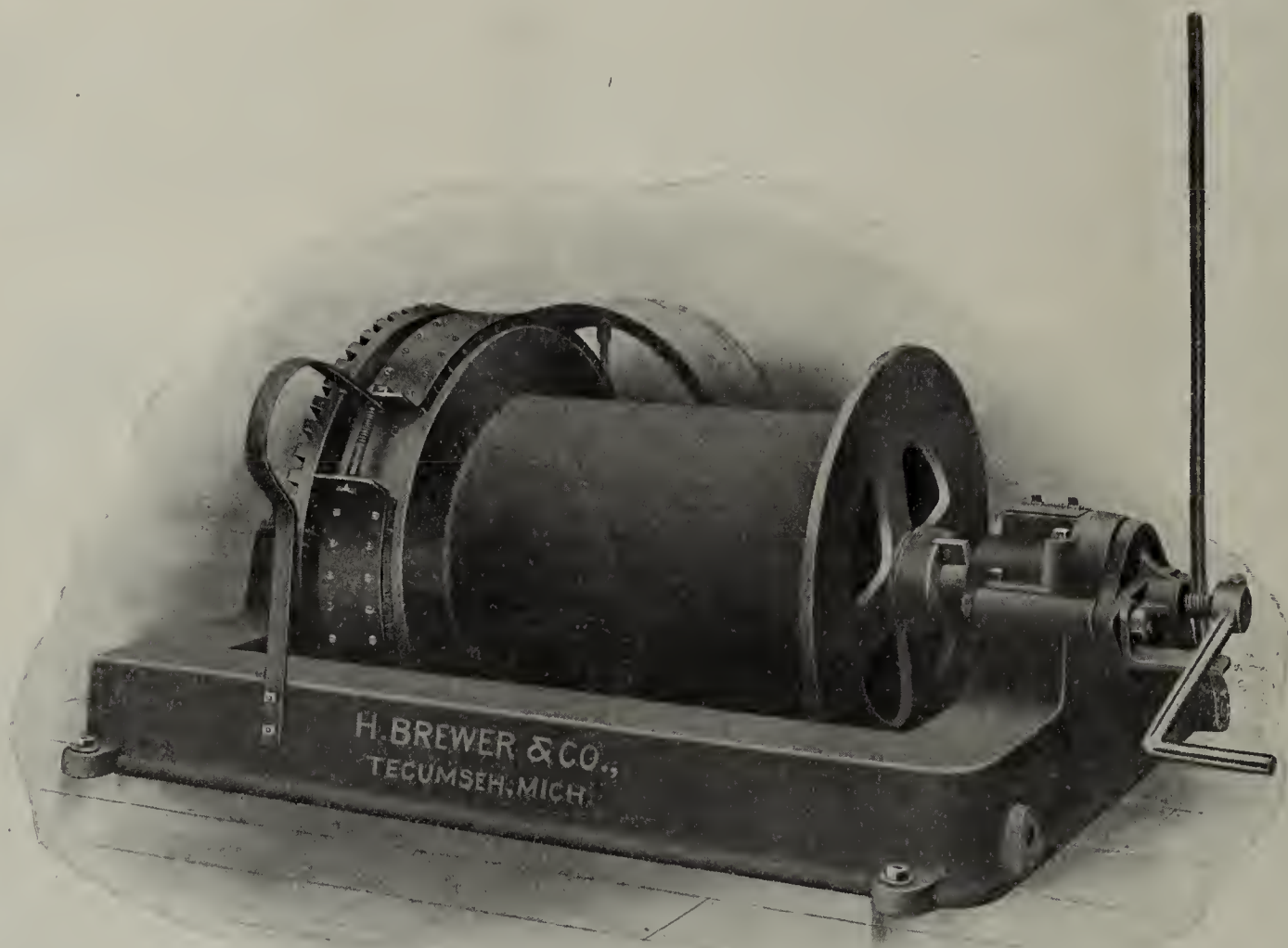
THE HIX "HAPPY THOUGHT" AUTOMATIC SIDE CUT BRICK CUTTER.

The Wallace Manufacturing Company
FRANKFORT, IND., U. S. A.

GOOD HOISTS

Good Hoists cost less than poor ones. They may cost a little more in the beginning but much less in the end.

Don't look for the lowest price, or the highest price, but for a GOOD HOIST at the right price. Look for weight, strength, rigidity, reliability, convenience of operation, and your money's worth.



THE BREWER NO. 28

Is a Good Hoist because it is well designed and built. Drum friction, and brake wheels cast together in one piece. Frame cast in one piece. Brake and friction surfaces, large. Bearings self-oiling. Weight 3000 pounds. Both spur and bevel geared patterns.

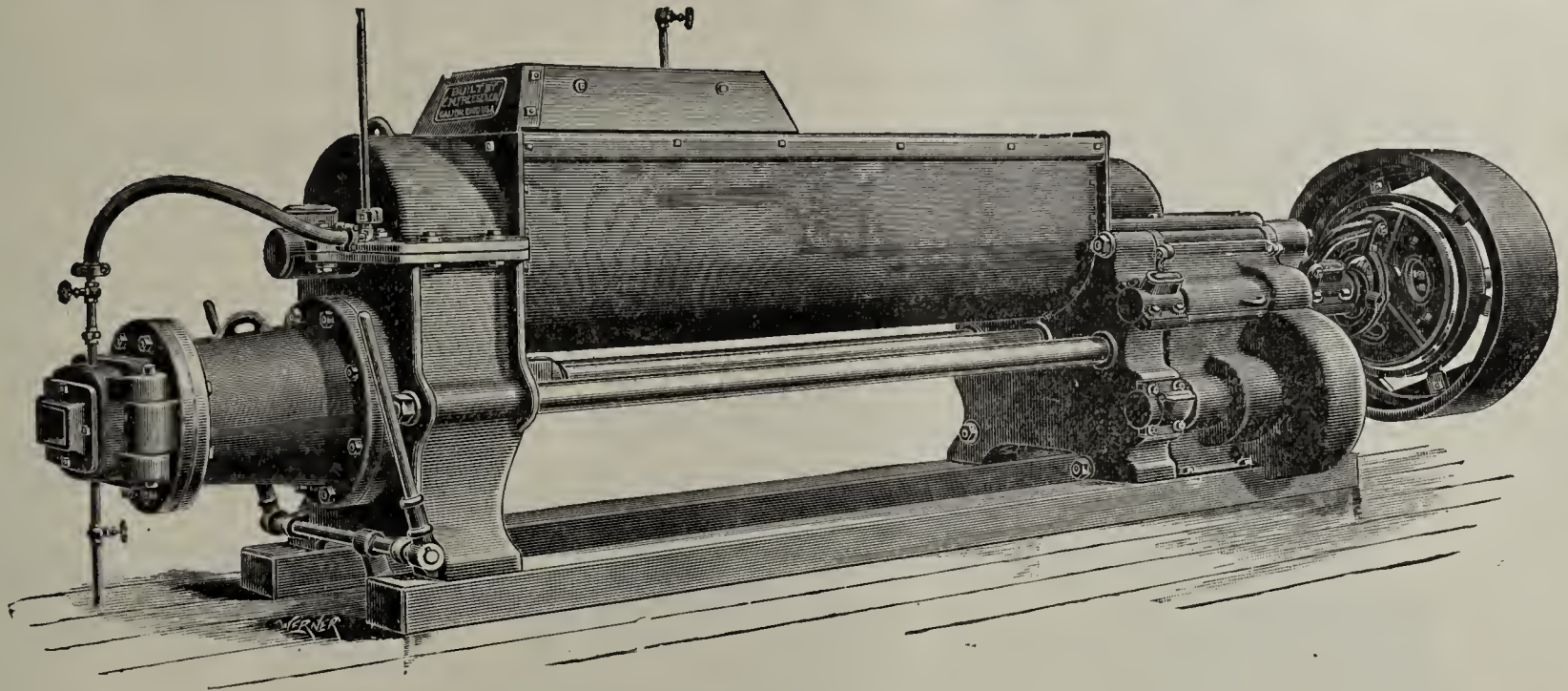
Prices Right

Grade Right

Everything Right

H. BREWER & CO. **TECUMSEH MICHIGAN**

UNION BRICK MACHINES



We build these Machines in five sizes. Capacities to 10,000 brick per hour.

Several hundred are in everyday use. They do first-class work and are convenient, economical and durable. This can be verified by investigation.

We also build Brick Machines with separate Pug Mill.

Don't forget our Automatic Cutters. They give satisfaction.

State your requirements and let us furnish particulars.

E. M. FREESE & CO.

GALION

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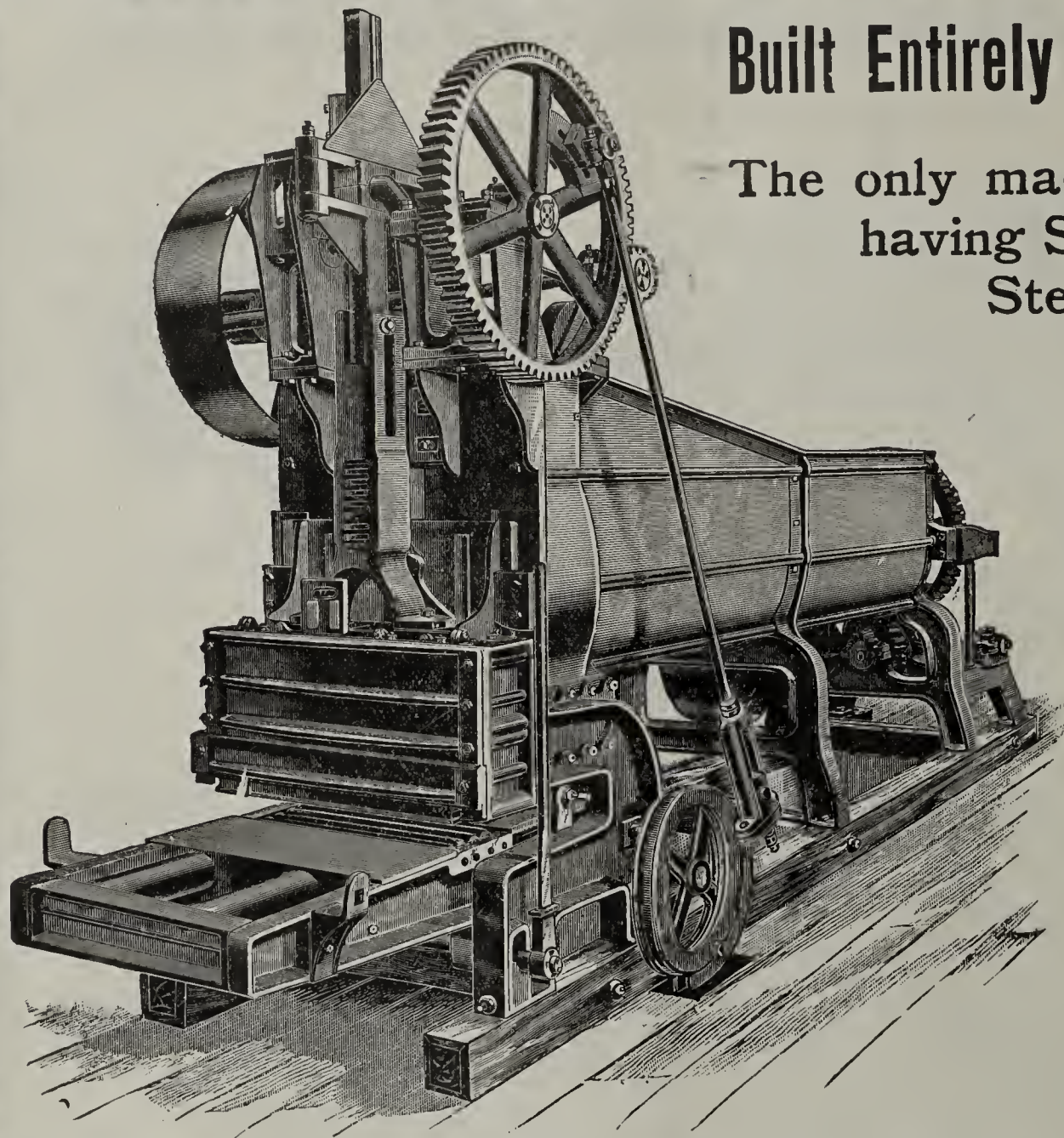
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OHIO

THE POTTS HORIZONTAL BRICK MACHINE

Built Entirely of Iron and Steel.

The only machine of this class
having Steel Gear and
Steel Shaft.

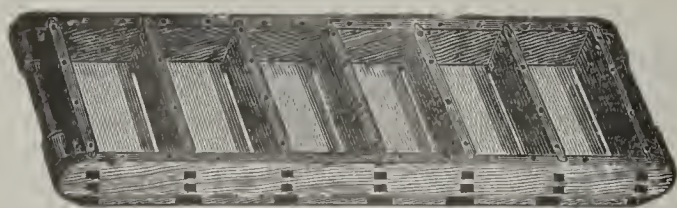


=====
Built of the Best
Material by the Best
Workmen.

=====
Simple, Strong and
Durable.
=====

No extra pug mill required to enable working the clay direct from the bank. Its great strength enables working the clay as stiff as practicable, insuring brick which will be
STRAIGHT and SQUARE.

THE LEADER OF ALL SAND MOULD MACHINES.



**BRICK MOULDS A SPECIALTY
QUALITY IS OUR AIM.**

We manufacture a complete line of Brick Yard Supplies. Write for prices.

C. & A. POTTS & CO., Indianapolis, Ind.

BRICK DRYERS

The largest and best. The drying done upon an entirely new principle. Brick made today. Set in Kiln tomorrow. Thoroughly dry. Will dry the most tender clay with no loss from cracking.

It has **No cars**

No transfer cars

No rail

No ties

No fans

No extra engine

No high or expensive stack

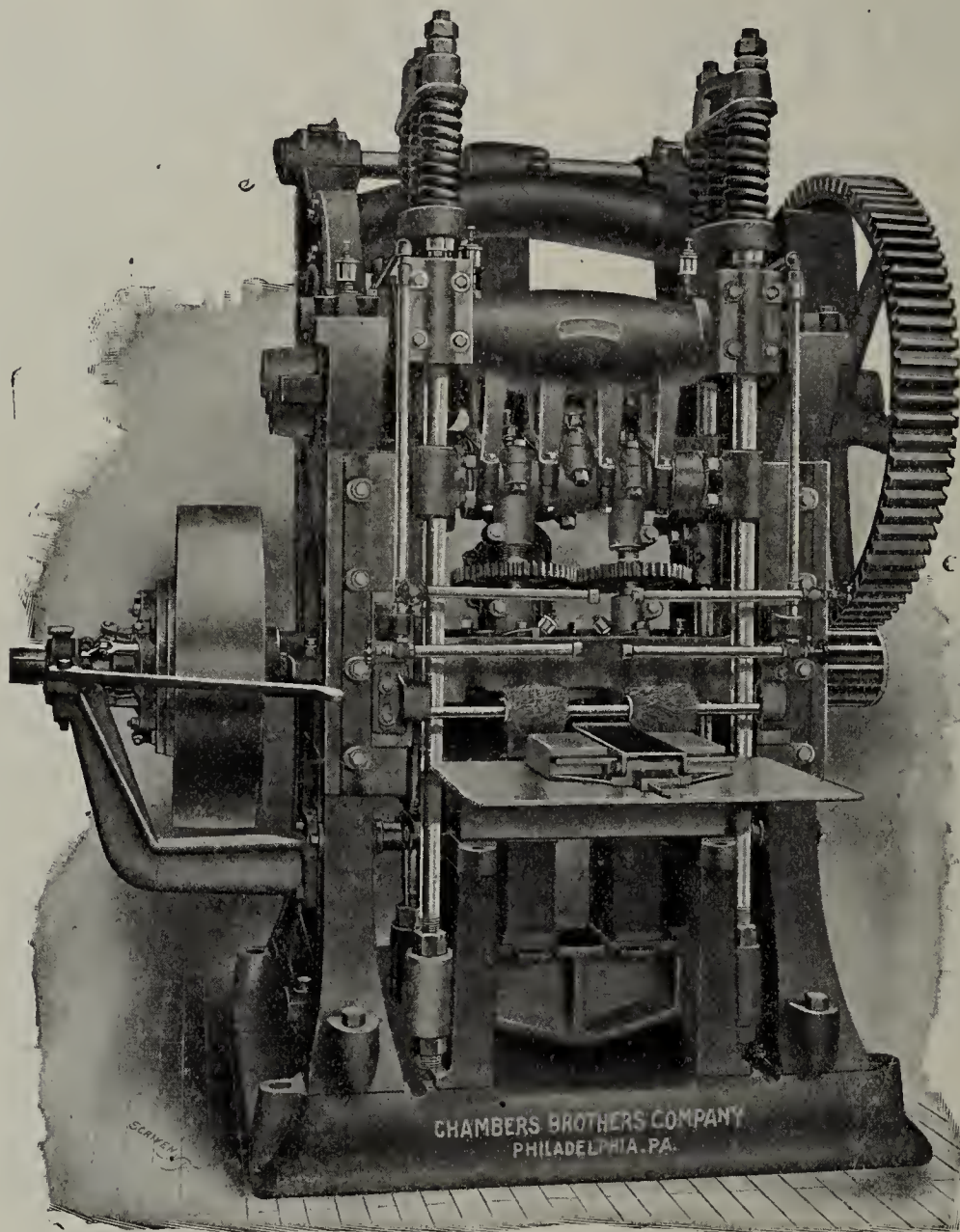
The best dryer on the market. Manufactured by

C. & A. POTTS & CO.

INDIANAPOLIS, IND.

MACHINERY FOR BUILDING BRICK AND FOR STREET PAVERS

Weight
 about
 11,000 pounds
 Capacity
 2,000 bricks
 per hour.



Single Crank
 Movement
 Working
 Machinery
 all above the
 Mold Box.

THE PHILADELPHIA REPRESS.

Automatic End Cut Brick Machines of five sizes, having capacity
 from 10,000 to over 100,00 brick daily under
 favorable conditions.

CHAMBERS BROTHERS COMPANY

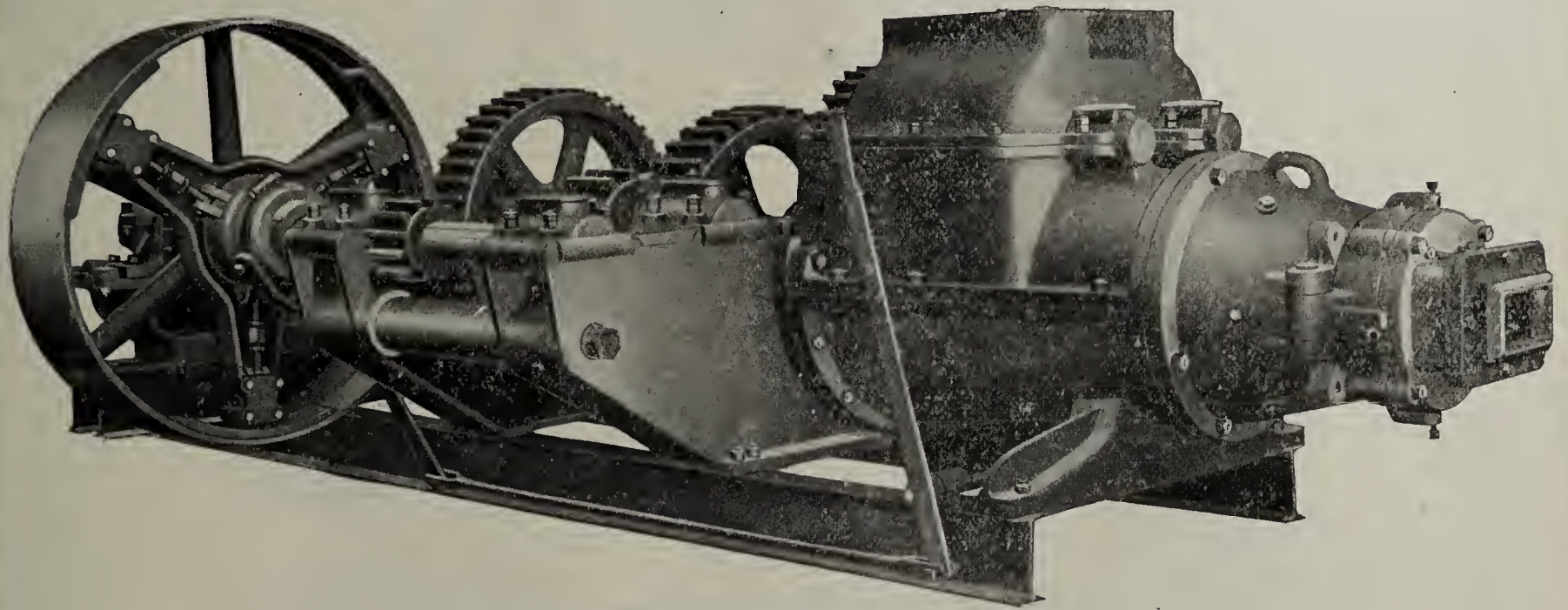
52D AND MEDIA STREETS

E. R. FRAZIER, Chicago Agent,
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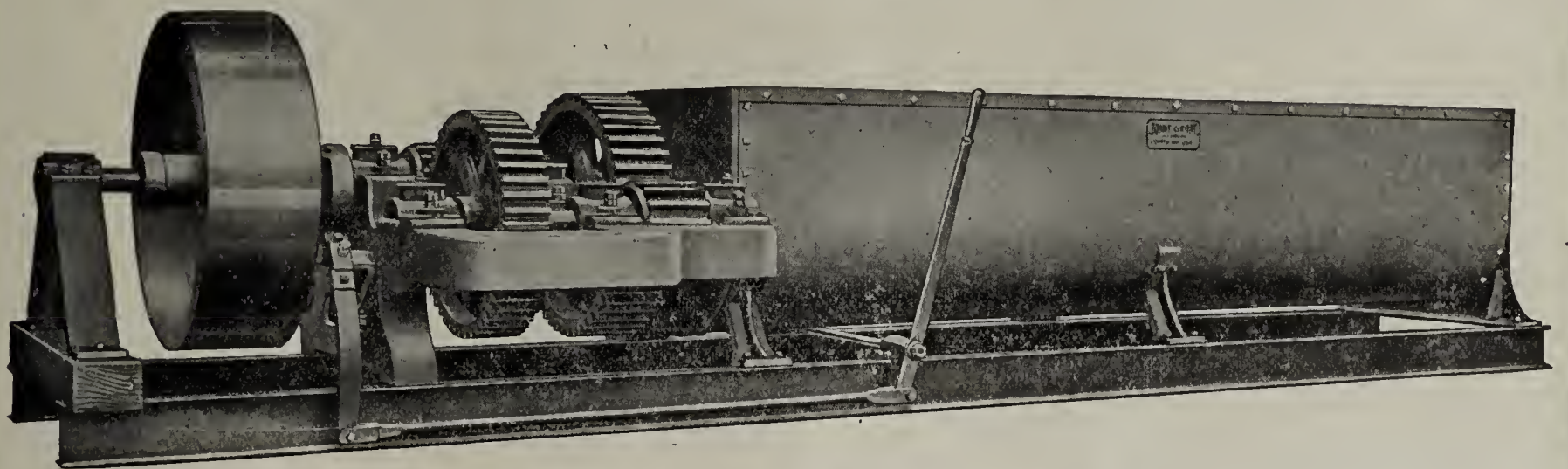
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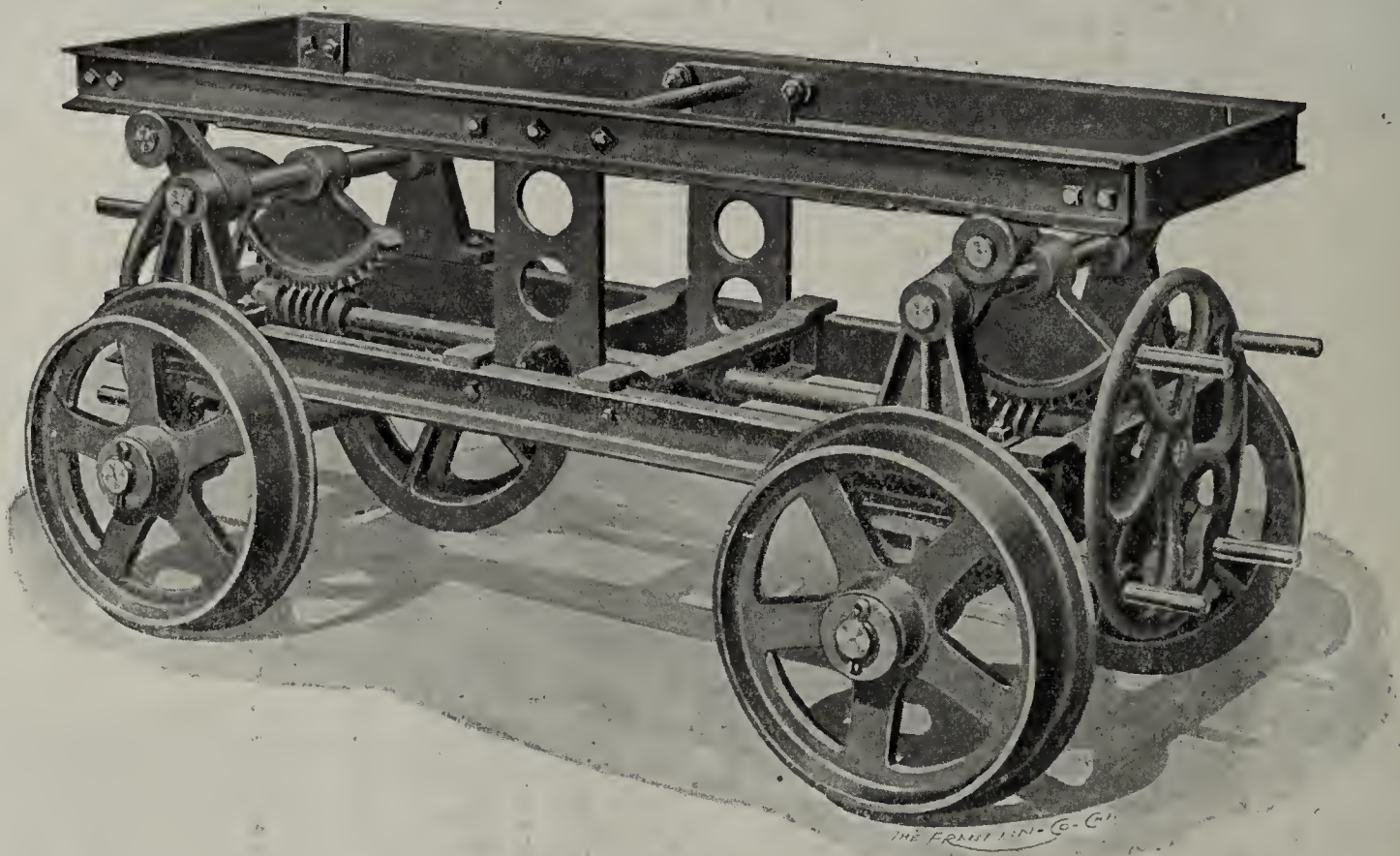
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THE MANUFACTURE, USE AND BENEFITS OF DRAIN TILE*

BY B. H. BRIGHT, BLACK RIVER FALLS, WIS.

To write a paper on drain tile reminds me a great deal of a story. There was once a bully who made a daring challenge in a certain bar-room where several other fellows of his type had congregated. With blood in his eye, he remarked that he could whip any man in town, then of the county and then of the state, but no one seemed to entertain his challenge. Finally he declared he could whip any man in the United States, when a "6-ft. westerner," who never takes bluffs, stepped up and handed him out a straight punch which put Mr. Bully out of business. After regaining consciousness and sizing up the situation, Mr. Bully said of himself, that he was all right but his mistake was made in taking in too much territory. So it is with me and this subject, I may be all right but I am taking in too much territory, in fact territory that could be divided and sub-divided in many ways. Lengthy papers could be given on subjects pertaining to tile as follows: "Mining the clay," "The manufacturing of drain tile," "The burning of drain tile," "The marketing of drain tile," "The laying of drain tile" and "The benefit of tile drainage." However, as our worthy secretary considers me capable of handling this subject collectively I feel highly elated over the fact and will endeavor to treat the various steps in tilemaking as best I can and as my limited experience will allow.

The process of mining, grinding and pugging the clay for this particular product is precisely the same as that for stiff-mud brick. We have only made 3-in., 4-in. and 6-in. tile, and as they are made they are taken from the cutting table and are then set on ends on the floor in dry sheds. This method of drying, however, is not satisfactory if they were to be made on a large scale, for they dry slowly, and they require too much shed room. If the time is limited for their drying they should be turned for the reason that the top ends dry so much faster than the ends nearest the

floor. We have never had any experience burning an entire kiln of tile although I understand this can be done. We use the lower half of the kiln for brick and the upper half for the tile, the latter being set on ends so as to allow a good draft (our kilns being down-draft) and with the 3-in. and 4-in. tile placed inside of the 6-in. As the soft tile and broken tile are both useless, it is one disadvantage a tile manufacturer has compared with the brick manufacturer for the latter can dispose of their soft product and also brick that are somewhat broken, at a little reduction in the price and they can be used to a good advantage for inside work. There is but one loss from the tile that has become broken in the dry shed and that is in the making for the material can be used over again, but if broken tile are allowed to go in the kiln or broken in any way after the burning, a great loss is sustained; that is the greater the percentage of these broken tile turned out the less will be the profit on the manufacturer's business. Therefore one should guard against any but perfect tile being set in the kiln and great care should be taken to see that the tile are sufficiently burned.

Summarizing this as a whole thus far, I would say, the mixing of the clays, their tempering, pressing, handling, drying, setting in kiln, watersmoking, the raising of heat, the highest degree of heat necessary to secure the best results, the length of time to cool the kiln and the exposure of the tile to air rushing into the kiln are all important factors in whole or in part which go towards the making of good tile. After the kiln is opened the tile are ready for the market and the price they will bring depends on the location of the plant, demand for the tile and their quality. The average price of them at factory, figuring each at 12-in. length, in this state is as follows: 3-in., \$12.00; 4-in., \$16.00; 5-in., \$22.00; 6-in., \$30.00; and 8-in., \$35.00 per M.

We will now leave the factory and take up the uses of the tile and the benefits derived from them. In the cultivation of retentive soils, drainage is the key of all improvements.

Farmers frequently desire an improvement in methods

*Read at the Seventh Annual Meeting of the Wisconsin Clay-workers Association at Madison, March 1, 1907.

and in general management of their lands without being sufficiently informed regarding the specific changes that will be necessary to bring it about or clear in their minds as to the profits that would accrue should such changes be made. When a farmer finds his land too wet for cultivation, he admits the necessity of drainage for the time being, but often hopes that the following season will be more favorable—which hope is frequently realized—and so takes the loss as one of the contingencies of the industry.

He waits in the spring for slow natural drainage and evaporation to relieve his land of the surplus water and permit the sun to dry and warm the soil sufficiently for the reception and germination of the seed, when by the aid of drainage the seeding could be done a week or ten days earlier. The injury resulting to crops growing upon land imperfectly drained, when the season is not the most favorable, is frequently taken as unavoidable—one of the vicissitudes of farming rather than a loss to be prevented by the use of well-located and constructed drains.

Facts which are easily discerned by the casual observer have pressed the subject of drainage home to both practical farmers and non-resident landowners in a most emphatic way. Those who have gone further into the subject of soil improvement by drainage have discovered greater advantages and more surprising benefits than were formerly thought possible. It is conceded to be a necessary accompaniment of scientific agriculture and our most progressive farmers have taken advantage of it to a greater extent than is generally supposed. It is an improvement applicable to all land not possessing natural drainage, and hence is required for the attainment of the best results from some of our most fertile land. The farmer, when convinced that it will be to his interest to construct some kind of a drainage system for the improvement of his soil, desires to know how to plan and perform the work in an effective way at an expense not exceeding the limit of profitable returns which can reasonably be expected. He will find it an advantage to have an intelligent idea of the theory as well as of the practice of drainage in order that he may adapt his work to the several varieties of soil and conditions with which he has to deal.

There are two kinds of conditions which require drainage; first, land which is wet or marshy, because it is too flat to allow surface drainage; second, land which has sufficient slope to give good surface drainage but which, on account of the large amount of vegetable matter or humus it contains and of its impervious clay subsoil, does not have good under-drainage. The lack of drainage in the first case is readily seen and understood, but the importance of drainage in the second case is not generally recognized, although its benefits are as great as in the case of marshes.

The process of artificial drainage is carried on in two ways: The surface drainage and the under drainage. Surface drainage, as commonly understood, is accomplished by open ditches while under drainage is carried on by the use of tile altogether.

The open ditches, aside from being used as a main, are not profitable to the farmer for various reasons which I will explain as follows:

(1) Open ditches require space and take valuable land.
(2) They are inconvenient, involving a considerable amount of turning in cultivating the land, which is an additional expense.

(3) Animals are liable to get into them and perish, besides being traps for stock.

(4) They are troublesome on account of the weeds that will grow along their sides—enough to seed the farm.

(5) They increase the damaging effects of our floods by not retarding for a time the flow of water.

(6) They carry the fine soil particles and much of the fertility into the streams and away never to return and the surface washing of our cultivated lands does more to lose this fertility than do the crops we grow.

The above reasons showing the disadvantage of ditches are at the same time points making the use of drain tile preferable.

The following are also facts which go towards proving the advantages of removing water downward through the soil by the use of tile:

(1) The surface soil is retained entire instead of the finest and most fertile parts being carried off with every considerable rainfall.

(2) Any plant food in manure or other fertilizer deposited upon the soil is carried into it with the water as it percolates downward from the surface, and so becomes thoroughly incorporated with the soil.

(3) Rain water as it passes through the soil serves a most useful purpose by dissolving and preparing crude soil material for the nutrition of plants.

(4) The soil, having been well prepared, is at all times during the growing season in readiness for the growth of plants, such growth not being hindered by stagnant water or saturation.

(5) The frost goes out earlier in the spring, so that the planting season opens one or two weeks earlier than in the case of soils affected by surface drains only.

(6) Where stiff clays are found the soil is made more porous, open and friable and roots penetrate more deeply than they do into surface drained soils.

(7) The effects of drought are diminished, as has been found by experience, owing to the enlarged and deepened soil bed and to the more favorable condition of the surface for preventing excessive evaporation of moisture.

(8) It aids in making new soil out of the unprepared elements since it permits a freer entrance of air and atmospheric heat which disintegrate soil material hitherto unavailable for use of plants.

(9) Stubborn and refractory soils when drained are frequently so changed in texture and mechanical structure that they become easily managed and respond to cultivation with abundant crops.

A drainage system includes both mains and laterals. The laterals are usually three or four inches in diameter and discharge into a main, whose size depends upon the number and length of laterals entering it. In light soil the laterals can be placed at from 100 to 150 ft. apart satisfactorily, but in clay land they should be placed from 60 to 75 ft. apart and in all cases the grade of fall should be at least one

inch to every 100 ft., but the greater the fall, the better will be the flowage, which in turn gives the best results.

No attempt should be made to make the capacity of the intercepting drains equal to the combined capacity of the laterals where a system of thorough drainage is employed. The size of laterals, where the soils are open and permits the use of drains 100 or more ft. apart, should be 4 and 5-in. tile which in some cases may be diminished to 3-in. at the upper end. For drains at a less distance apart, 3-in. tile may be used for laterals. They are usually required to carry only a small part of their full capacity in order to relieve the soil of its surplus water. To do this well, however, they should not be quite full at any time, unless it be when there is more than ordinary rain fall. They do not work under a pressure head, hence their velocity of flow is as great when running half full as when running full. Water in a drain attains its greatest velocity when three-fourths full and its greatest rate of discharge when nine-tenths full.

Since the work of laying the tile is usually more than one-half the entire expense, and with the cost of laying 3-in. tile practically the same as that of 4-in. tile, it is poor policy to put in a small tile where a larger one would do 50 per cent better work.

It is claimed that there are 2,500,000 acres of low and marsh land in our state which is only partially productive and in addition to this there are at least 2,000,000 acres of upland clay soil which will require underdrainage, this making a total of 4,500,000 acres. It is estimated that the thorough drainage of this 4,500,000 acres would increase its value \$1,000,000.

In the care of tile drainage of clay land already under cultivation, the increase of yield varies from 15 to 50 per cent. This is a net profit on the cost of drainage, since there is no increase in expense of cultivation of the land. In fact, it is easier to work drained land than undrained land. Experience shows that drainage usually pays for itself in from two to four years.

The following are a few instances, in this state, where a record has been kept of the expenditures in draining certain lands and the profits realized from same:

(a) On broad marshes.—The experience of Carl Foll, of Deerfield, illustrates the benefits to be derived from the use of tile on marsh areas. Mr. Foll had about 15 acres of marsh, 70 per cent of which was practically useless. Cattle often became mired in an attempt to cross it. At no time of the year was it dry enough to admit of plowing on at least 10 acres of the lowest portion, and indeed, plowing would be useless when grass was growing in tufts and bogs upon which water stood almost continually.

The soil consists of black muck and peat to a depth varying from 5 to 10 ft., underlaid by a gravelly sub-soil. On about two acres the gravel lay within three feet of the surface and here the underdrainage was sufficient that the land could be used for pasture. After laying the tile in 1901, the first crop planted was corn, which was injured by the spring frosts, but finally ripened well. After the corn had glazed, the crop on a typical square rod was cut and weighed. It was found that the yield was at the rate of 24 tons and 300

lb. of green fodder per acre. The corn when husked from the entire field averaged 75 bushels per acre. The first crop was sufficient to pay for the tiling as well as the top dressing of manure, while the improvement was a clear profit. On the following year the yield of green fodder was 17 tons per acre, and the field was then sown to rye and seeded to timothy and red top which yielded, in 1905, three tons of hay per acre.

The results of this first experiment in tiling were so satisfactory that Mr. Foll has continued the work until, at present, he has tiled 100 acres, all of which gives good satisfaction except one field of about 10 acres where the outlet is faulty.

Mr. Zabel, a neighbor of Mr. Foll, has put tile on about 20 acres. On about one-half of this, the yield has been increased 100 per cent, but on the remainder the benefit cannot be put at more than 50 per cent. On the latter portion, although the tiles run nearly full after a rain, they do not remove the water fast enough. A 4-in. tile is too small to carry off the underdrainage from this 10-acre field. The water is removed from the tile in course of time, but is allowed to stand so long after a severe downpour of rain that the crop is stunted or entirely drowned out.

Nels Holman, of Deerfield, feels that his experiment in tile-draining marsh for pasture is highly successful. His land was similar to that of Mr. Foll's until 1903, when Ed. Reichenbach, a drainage engineer and contractor of Jefferson, planned and put in the system. The land is becoming more firm every year and the grass has begun to grow between the bogs where the water formerly stood continually. At least 10 per cent of the money invested was realized from the tile in benefit for the first year.

The farms of Joseph Winterling, of the Jefferson County Asylum and of Ex-Governor Hoard were also visited, making a total of about 500 acres of tiled land investigated, on 80 per cent of which the money in tile yielded 50 per cent of itself in increased crops each year. Ten per cent of the land was merely used for pasture, and the annual income from the tile was perhaps 10 per cent of the amount invested. Only in one instance was tile found that did not work successfully, and, in that case, the cause was a defective outlet and the back-water of the river, rather than any fault of the tile itself.

(b) Pot holes and ravines.—The strongest testimonial of the benefits derived from the drainage of such locations is that the practice has spread and gained favor in communities where it has been tried. About 15 years ago Mr. Glessig and Mr. Wiegum, prominent farmers living near Cleveland, Manitowoc County, became interested in the tile and took a trip to Jefferson, Wis., to study tile and tile problems. They returned home determined to lay some tile as an experiment. Today, of the 14 farms which abut the road extending for 7 miles west of Cleveland, 12 have tile in greater or less quantities.

Comparatively speaking, Wisconsin farmers are very ignorant on the drain-tile proposition. Of all the farmers that have been to our factory after drain tile, after inquiring into his history invariably I find he has just moved in from Illinois and it is safe to say that 90 per cent of our sales has been to Illinois farmers.

I have heard some of our oldest farmers in this section while at the factory after brick and noticing a pile of drain tile, ask what they are used for.

A great deal more could be written on the laying of drain tile as it is taught in the agricultural course at Madison, and it is very interesting indeed. Also I might write several pages on the laws governing drainage which we all should know, but time will not permit.

WHAT THE CHMELEWSKI PATENT KILN IS AND HOW IT WORKS.

It has often been shown that arched continuous kilns which are commonly used for the burning of brick or similar wares, are faulty in many respects, they are either too costly in construction, of too small capacity, and consequent small productivity, often producing a large percentage of poor and inferior quality, which faults and imperfections have in some countries been the cause of largely curtailing the use of such kilns; while in other countries the actual value of continuous kilns have been doubted.

Experience has thus shown the great need of a kiln so constructed that these faults and imperfections would be entirely obviated or remedied.

Of such an approved kiln is the following a full description:

The object of this invention is to construct and build a kiln for burning brick and similar wares which will be a fuel saver, simple in its construction, durable, cheap, easy to operate or care for, and capable of producing clean-colored, well-burned and more perfect ware, in quantity four times exceeding the production of the common continuous kilns now in use, during an equal period of time.

The construction of the kiln and the art of the invention is clearly and easily understood from the drawings.

Fig. 1 is a top view of the Chmelewski, perfected drying and burning kiln, a part of which to the left is separated by a horizontal plane immediately above the bottom of the kiln, and the rest shows the kiln in its full height, and as such filled with ware and provided with proper and necessary arrangements for burning.

Fig. 2 is a side or front elevation of a portion of the kiln.

Fig. 3 is a vertical, transverse sectional view taken on the plane indicated by the line 3—3 in Figure 1.

Figs. 4 and 5 are vertical longitudinal sectional views taken, respectively, on the planes indicated by the lines 4—4 and 5—5 in Figure 1.

Fig. 6 is an enlarged, vertical transverse sectional view, taken on the plane of the line 6—6 in Figure 1, with smoke gathering channel 37 situated in the upper part of the central wall.

Fig. 7 is a diagrammatic view illustrating the continuous operation of the kiln.

Fig. 8 has the smoke flue 37 situated under the middle wall.

When comparing figures B and C, one will find through sectional views that the area of the material piled in this new kiln, Fig. C, is four times as large as in the common arched kiln, Fig. B, which latter, on account of the span of its arch, not without considerable difficulty can be enlarged in width.

In connection herewith can be said that the walls in the new kiln can be increased in height by which the capacity of the burning chamber will be larger. The placing of the flue under the middle wall, as shown in Fig. 8, has its advantage in that the whole kiln and its upper construction can be reduced, and shows also the possibility that kilns of the Fig. B type can easily be changed under the improved type in Fig. 8. The burning chambers in the old arched kilns can be increased in sectional area so as to increase the capacity two and one-half times its present. The Chmelewski continuous kiln is made up of one inner or central wall 21, Fig. 1, 3 and 6; one outer wall 22, Fig. 1, 3 and 6, between which inner side and central wall 21 is an endless burning channel 23, Fig. 1, 3 and 6, which is so constructed that it can temporarily be divided into separate compartments while the kiln is in operation. The compartments are shown in Fig. 1 and 7, and number consecutively from 1 to 20.

The kiln consists chiefly of two straight sides which are united at their ends either by round or square walls which

are spaced from the ends of the central or inner wall 21, the latter being of shorter length than the sides of the outer wall. These walls, as well as the central wall, may be of different height or thickness, and built upon such foundation as is common for not arched field kilns.

The brick or other materials which are to be burned are introduced into the compartments of the continuous or endless burning chamber 23, through the openings 24, which openings are placed in proper places and near the bottom of the outer wall 22. At the bottom of the same outer wall, between the openings 24, are other small openings 25, through which the fuel is passed to the compartments in burning chamber 23, as will be shown later.

When one of the compartments or sections of chamber 23 is filled with green brick, or other ware, the door opening 24 is closed by brick or masonry. In these temporary walls or closures is an opening left for firing as is provided for in the openings 25. The openings 25 as well as those in the closure of the door 24 left openings are intended for fuel with which to dry the green brick, that is, to drive out the moisture in the same and bring it to a temperature of a little over 100 degrees C., at which temperature, when the partition shields are taken away, it is not injured by gases from the goods exposed to considerable higher heat in other sections of the kiln, as will be later shown.

When the goods in this section after the so-called fore drying or water smoking are sufficiently dry or have received the needed temperature, close the fire openings 25, of this section as well as the openings in 24, also, the outlet openings 31 in the top covering.

The channel 23 has no arch but the mass of brick or ware to be burned is provided, after being placed in position, with the temporary covering 27, Fig. 6 and 7, which rests on the brick or the material to be burned. The piling in of this is done so as to leave small spaces between the brick, giving the heat room to circulate through the mass of brick or ware to be burned. In the ware at the bottom of the burning channel or chamber are arranged lengthwise small channels 53, Fig. 6; and also crossway running channels 54, Fig. 6, which latter channels one enters straight in from each fire opening on the outside. Vertically running channels 32, Fig. 6, protrude through the covering or top 27, Fig. 6. This top or covering can best be made of two layers of old brick 29, Fig. 6, which are made tight by mortar over which is spread a covering of dirt or something similar, 30, Fig. 6. Of these channels 32, which protrude through the covering, are during the process of drying from the fireholes 25 and fireholes 24, only those on the drawing Fig. 1, chambers 17, 18, 19 and 20, and Figs. 6 and 7 with 31 designated holes open for escaping steam, gases and smoke.

All other vertical channel openings above the same chamber are closed. All channel openings as well as those in mortar fastened 32, and the open 31, are used, during the later effective burning, as fireholes. They are then freed from their fastenings in the top and provided with loose, movable iron caps 34. The heat and products of combustion from the fuel introduced through the openings 32, and the gases given off by the brick mass from the effects of the heat, escape from the burning chamber 23 through outlet channel 36 at the bottom of the center wall, after first passing through a number of chambers filled with the goods of a decreasing temperature, as the arrows in Fig. 7 in chambers 9, 10, 11, 12, 13, 14, 15 and 16 show.

The channels 36 are constructed so as to connect with the lengthwise running flue 37 through the middle or central wall 21, shown on the mentioned drawing Fig. 3, 4, 6 and C. and situated in the upper part of this wall; this flue need not necessarily be placed in the upper part of the central wall; it can, as is shown in Fig. 8, be constructed under this wall and by so doing, the width of the wall may be narrow.

It can, also, be placed *in* or *under* or *outside* the side walls, or *under* the burning channel's bottom, and in the latter case, through the rising heat, add considerable to saving of fuel. If proper pipes are arranged about the kiln, the escaping heat may also be used for drying the green material. Suitable cone-shaped valves 38, Fig. 3, 4 and 6, adjustable by bars 39, are arranged in the flue 37, reciprocating with valve seats 40, Fig. 4, at the upper ends of the passages 36, Fig. 1, 3, 4, 6 and 7, in such manner that the latter may be readily opened and closed and the draft regulated. The outlet in the longitudinally extending smoke flue 37 is best located at the center of the kiln, extending downward through the middle wall and under the foundation of the fireplace, as shown in 41, with dotted lines in Fig. 3, connecting with a suitable chimney 42. In the center wall 21 is provided a manhole 43, arranged for cleaning the flue 37, and in this wall are also provided chambers or vacant spaces 44, Fig. 4, intended chiefly for saving of brick.

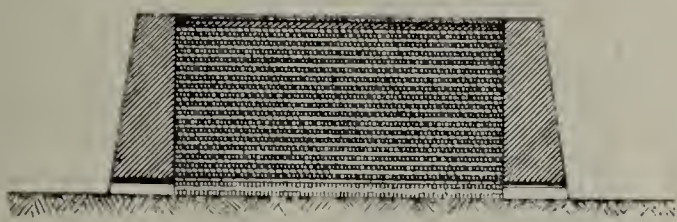


Figure A. The very old Open Field Kiln

These vacant rooms may be filled with sand or something similar. On top of central wall 21 is a track 46, Fig. 2, 3 and 6, on which cars may be run for carrying fuel for fire-holes 32. Along the outside of surrounding wall, shelves 47, Fig. 3, are arranged for storing of fuel. These shelves are intentionally placed toward the side so that the fuel will not be exposed to the heat from the covering of the brick or the heat from the fire-holes situated in this covering.

At one end of the kiln is a bridge or landing 49, Fig. 2, for transporting cars up and down.

In dividing the continuous or endless chamber 23 into sections or compartments in which the brick may be heated and dried before actual burning, it is provided with temporary removable partitions or shields 50, Fig. 1, 3 and 7, which consist of one or more vertically removable plates or sheets of iron or other fireproof material. The sheets 50 consist of three or more separate pieces or plates, according to the breadth, and as many as 4 or more of these may be needed at the same time in the kiln shown. These partition plates slide vertically and are raised or lowered by means of ropes, cables, chains 51, Fig. 3, running over pulleys or rolls 52, arranged for in surrounding construction 48. Each of these ropes is with one end attached to the upper part of the partition shield while the other end hangs loose within convenient reach of the workman. During the process of burning these shields are removed so as to cut off or disconnect the divisions or chambers in the endless channel 23, in which the fire for drying goes on, as is explained below.

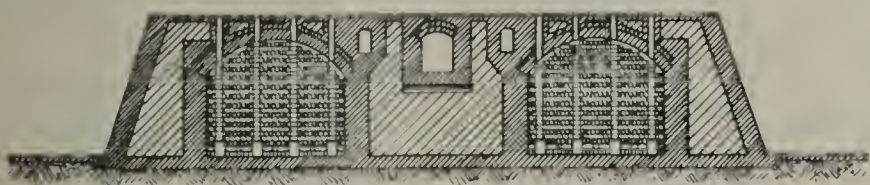


Figure B. The common Arched Continuous Kiln

The operation of the kiln will be readily understood from Fig. 7, in which the 20 divisions or compartments in the endless channel 23 are systematically shown by the numbered rooms or blocks. In Fig. 7, 1 designates the part which is being filled with green brick; 2 designates the apartment

passing fuel through the openings 25 and the opening in which has just been emptied; 3 designates the apartment from which the finished ware are removed; 4, 5, 6, 7 and 8 designate the apartments having a various temperature and in which the burned material is being slowly cooled off, and through which air is supplied to the two chambers 9 and 10; as the direction of the arrows on the drawing shows. Fuel is introduced into these chambers through fire-holes 32 in the covering, to increase the temperature to such degree as is necessary for the burning of the goods.

11, 12, 13, 14, 15 and 16 designate apartments which have gradually decreasing temperature and through which the heat, gases and products of combustion pass from the fire in chambers 9 and 10, as is also shown by arrows to outlet 36 in section 16, which leads to chimney 42, Fig. 3.

17, 18, 19 and 20 designate apartments temporarily separated from each other by movable shields 50. In these departments the green ware are being dried and heated by

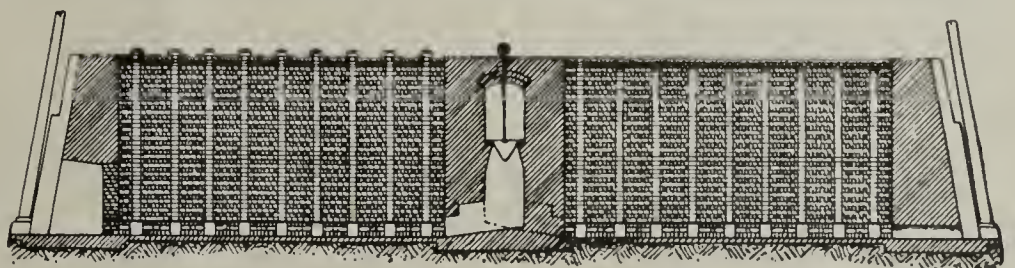


Figure C. The Chmielewski Patent Kiln

the temporary closed door 24, Fig. 1, 2, 3 and 6, in the side wall of the kiln.

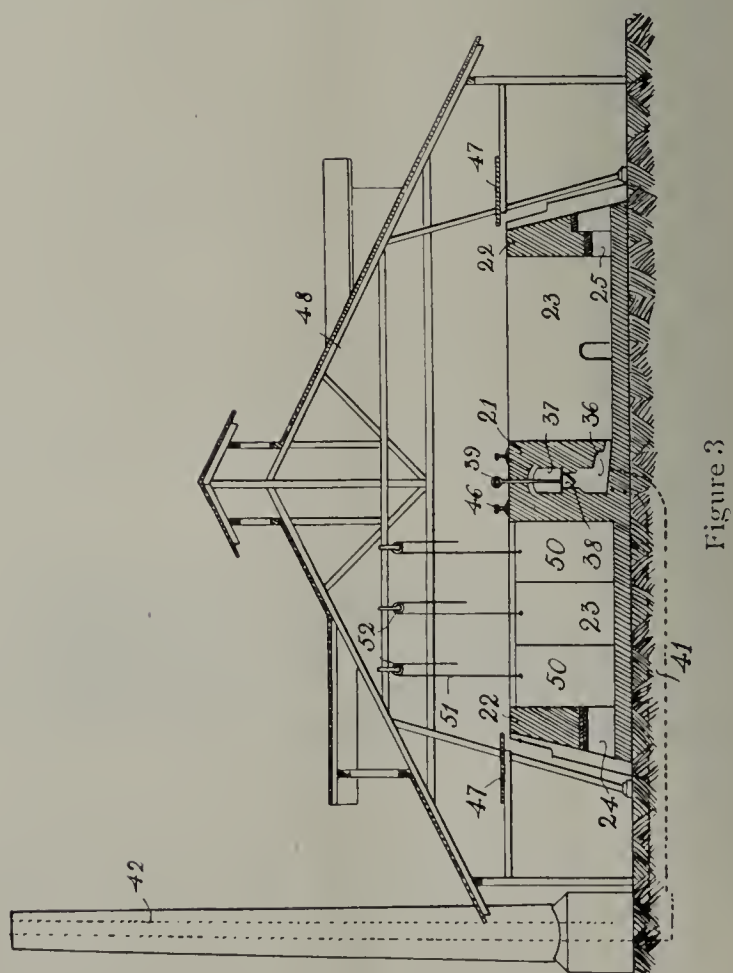
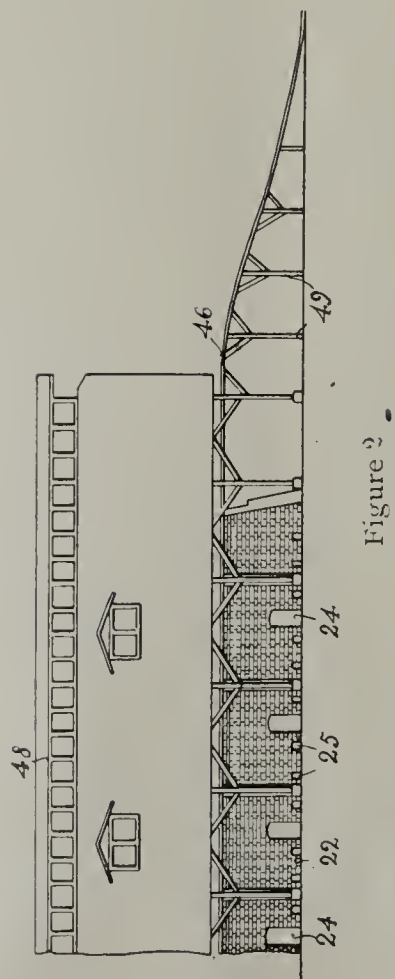
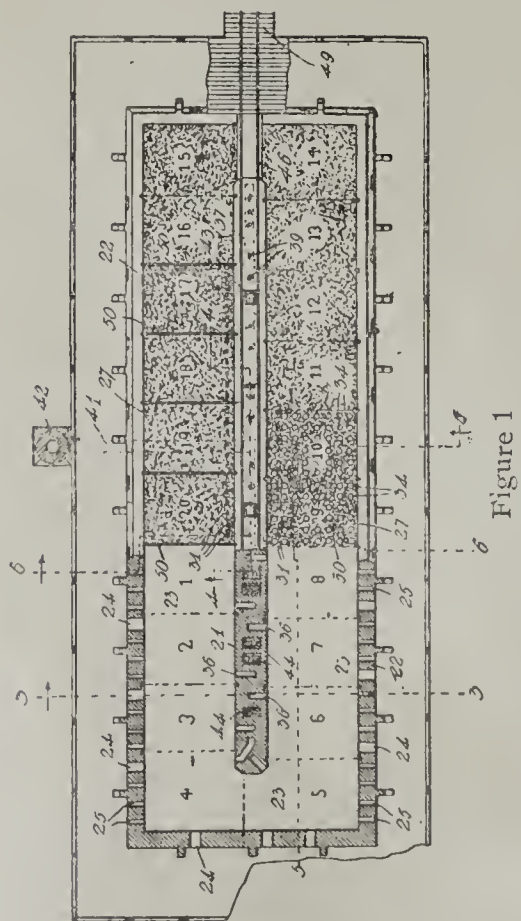
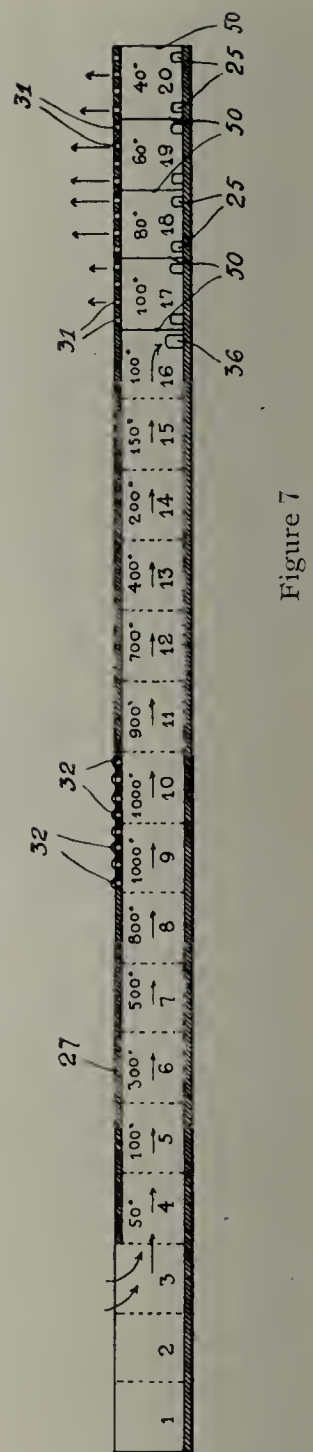
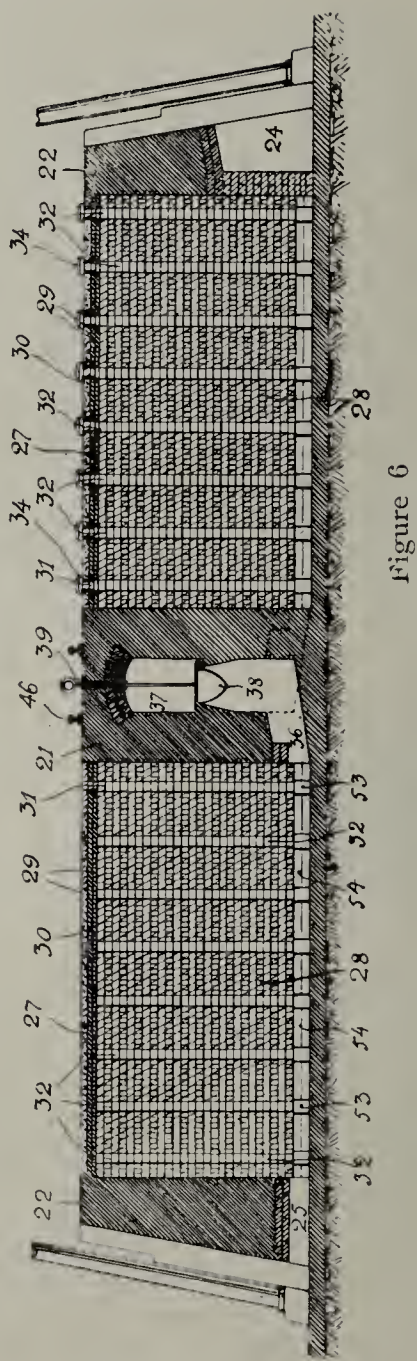
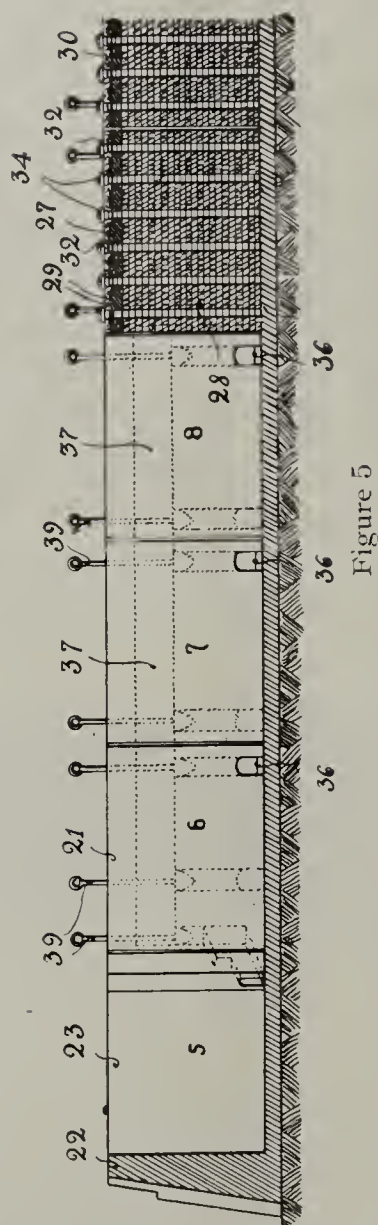
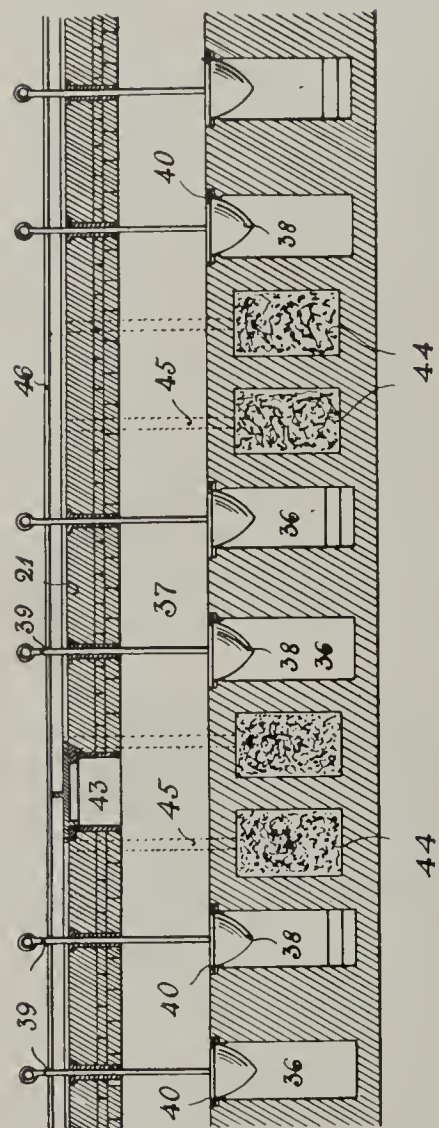
The fire section 20 has just been started, smoke and steam are rising through openings 31 in the covering, see Fig. 1 and 6. The fire in 19, 18 and 17 being each about a day older than the next adjacent, so that the temperatures in the departments 17, 18, 19 and 20 vary as indicated. Smoke and considerable steam rises from No. 19 the same as in 20. The same can be seen in 18 still passing through opening 31 in the covering, although the temperature is there considerably higher. There is very little steam or smoke rising from 17 as the goods have now been drying and the temperature now increased to about 100 degrees C. or more.

The preliminary drying is done in the kiln here described in the same manner as in the old field kiln, but on account of the short time of only two or three days, which are needed for emptying and refilling one chamber, the bottom and walls do not have time to cool off but retain considerable heat. The fireholes 25 in the outer wall are, for this reason made smaller and the distance between them double that of those in the field kiln. Experience has, however, shown that the firing for drying is done in a shorter time, and that the consumption of fuel is reduced to about half than in those last mentioned kilns.

When the kiln is to be used the raw brick are put in through the door 24, in to one of the compartments, and after this is filled, the temporary covering 27 is put on top of the brick, and the door 24 closed, except the leaving of a firehole as previously mentioned. When the covering is put on arrangements are made for the openings 31, Fig. 1 and 6.

Valve 38, Fig. 6, at the section's outlet 36 is kept closed during the time of drying for each separate chamber. The openings 31, Fig. 1 and 6, in the covering, are the only outlet for smoke, steam and gases created by the fire in the openings 25, and the opening in the closed door in the section's outer side. About four divisions are fired simultaneously from the outside; each division is separated by the movable shields 50 and the firing of a new division begun

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daily, or as soon as the filling of a division is done. The shield which separates chamber 17 which has been fired from the kilns outside the longest, is removed when the brick are dry, and have reached a temperature of about 100 degrees C. This shield is now moved and put in position to shut off the chamber last filled with raw material, in which then should begin the firing from the outside for drying. At the same time that the shield is taken away, the firehole 25 and the firing hole in 24 in the walls outside, and the openings 31 in the covering, are closed. The channel 36, running from this chamber is opened by lifting valve 38. The corresponding valve in the previous chamber, in this case 16, is closed. The chamber 17 will now in a horizontal direction as the arrows show, be filled with heat and gases, which after having reached the effective burning places 9 and 10, pass through chambers 11, 12, 13, 14, 15, and 16, and the circulation has now progressed a new step.

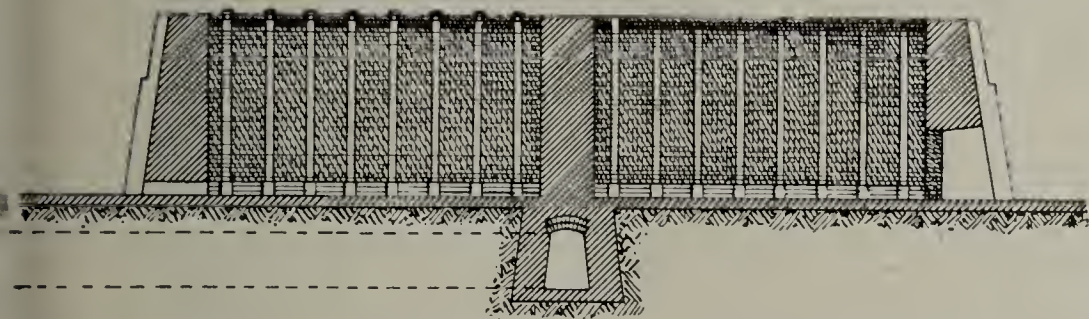


Figure 8

Through valve 38 in chamber 17 pass the smoke and gases now to channel 37, and continue to chimney 42. From above, through the departments' openings 32 in the covering, introduced fire is now circulating through the mass of goods, which is between the fire places 9 and 10, and the partition shield which now stands nearest to these fire places. The direction of the heat is now as indicated by horizontal arrows in Fig. 7, divisions 9, 10, 11, 12, 13, 14, 15 and 16. But, however, in such a way that the outlet is through department 17. As the goods through settling or color show sufficient burning iron caps on firehole 34, Fig. 1 and 6, in which the firing has taken place, are moved forward and the firing holes in the covering immediately closed. The new firing hole to which the iron cap is moved must, as before, be arranged right above the vertical channel 32, made and provided at the time of the piling in of the goods. One or two or more parts of the department shown on drawing are fired simultaneously from above as effective burning has been reached, depending chiefly on the quality of the clay of which the goods are made. It is plain that when the brick have been first dried and the temperature raised to over 100 degrees C. in separate and closed divisions, which are here fired from the side, the gases driven from the brick in other compartments of the kiln, cannot injure the goods later put in, by the taking away of the partition shields, because the temperature of the heated brick is already so high that condensation cannot take place.

This kiln is a combination of the very oldest not-arched field kiln and a more modern continuous kiln, and is of especial economical value, as well in regard to the simplicity of its construction and in its easy operation; also, because in this kiln are placed half-dry ware, or ware dried so that the under layers can hold the upper. The last condition admits of considerable saving in labor and in arrangements for drying. The abolition of a costly arch will admit the lighter and cheaper outer and inner walls, not stronger than in the common open, not-arched, field kiln and almost no foundation, or at least, very little is required. It lessens the need of iron caps 34, through which the fuel is introduced, and this decreases in a large degree the cost of construction. In this connection can be said that the outside

walls as well as center or middle walls can be built twice as high as those in the common arched, continuous kiln, and at a greater distance from each other than is the case in the latter, by which the size of the burning channel and the capacity of the kiln is greatly increased. This increase is calculated to be more than four times that of the capacity of the common continuous kiln.

The placing of the temporary covering directly on top of the brick makes it possible for the same to drop or lower itself as the material, in process of burning, shrink. The trouble with the channels 32, Fig. 6, in the arched kilns, is that the goods are pushed towards the sides of the firehole and this trouble is avoided in this kiln. In the arched kilns the heat gathers in the space which forms itself, during the burning process, between the top of the arch and the pile of brick, and there, through over-burning, often causes brick to burn in a lump which is difficult to remove. This without first having been utilized in the lower rows. The effect of this heat in the Chmelewski kiln is mostly on the middle rows of the brick, and from there, in equal radiation, spreads itself to all the layers. The extension of the rays of this heat from the middle rows of the brick, makes it possible to obtain a product even and well-burned through all its layers. The economical result is of the greatest importance and is established by years of practical experience. This should be considered one of the essential points in the new system here described.

By the successive moving or changing of the iron caps 34 on the upper side of the kiln has the use of such iron caps been brought down to 12% of what would be needed in arched kilns capable of producing an equal quantity of ware burned during the same period. The need of iron ventilators or valves is brought down to a minimum of 20 as against the great number of different kinds used in the arched kilns. By this reduction in the number of iron caps and ventilators, the cost of construction is considerably reduced, and the loss of heat through radiation through iron, reduced 80%.

The operating of this kiln is economical because without increased consumption of fuel a much larger quantity of ware of better quality, more evenly burned and of clean color is produced than can be done in a common, continuous kiln. Not even the old field kiln can, except the saving of fuel, when it is a question of burning brick in larger quantities, during any length of time, compete with this kiln either in the quality of the ware produced or in economical result, because the field kiln often turns out brick which are either not burned enough or else too much. The field kiln cannot work continuously and during emptying and refilling process, must be completely cooled off, which of course increases consumption of fuel and a loss of time at every refilling of from 14 to 20 days when this new kiln requires only 2 or 3 days for the same work. The kiln of which this is a description is a combination of the old field kiln and the newer continuous ring kiln and superior to each of these types.

In building and construction it costs less than the arched, ring kiln and without using more fuel than either of these, will burn a larger quantity and of better quality, during an equal period. It requires less fuel than the field kiln and the saving of time is considerable. It produces ware well and evenly burned and of the best color.

All these facts show the economical results to be gained over either of the older types.

Depending on the experience from the kiln in Finland, and the present wood price in Boston, \$5.00 per cord (as is known, wood is commonly used in the vicinity of Boston), that 1,000 brick, size $8\frac{1}{8} \times 4 \times 2\frac{1}{2}$, could be burned in

this new kiln for about 50 cents as against \$2.00, which now represents the average cost for burning brick there with the present method. The simple construction and the method of burning proper makes it possible that the material to the kiln in main consists of common building brick, or as it is with the kiln in Finland of brickbats.

The more expensive material, as for instance iron parts, are reduced to a minimum. Firebrick are not at all needed in the kiln, only take care to keep the kilns inside well whitewashed.

The cost, as before stated, will not exceed the cost of a number of open field kilns burning the same amount of brick in the same length of time.

On account of the heavy water vapor, from the water-smoking compartments, depositing right into the air not more than one-half the draft is needed in this kiln as in continuous kilns of other types and the smoke stack can be made shorter and not over one-third the length of the kiln in height. The same conditions rule with the smoke flues.

This continual increase of the kiln's capacity is done through simple addition of the kiln's walls with brickbats layed with mortar. This work can be done by any workman. The more the kiln is increased in height, the more the brickmass is increased, which is being burned.

The smoke flue at the bottom of the kiln makes it possible to increase the room in the burning canal without mentionable cost, as above has been described.

Paul Chmelewski, counsellor of commerce, Helsingfors, Finland, is the inventor of the kiln and Dr. Herman Rabergh, 24 Cottage Ave., Fitchburg, Mass., is the sole agent in this country and will gladly give further advice.

FEDERAL BRICK COMPANY EXPECTS TO SECURE CONTROL OF 80 PER CENT OF NEW ENGLAND OUTPUT.

New Britain, Conn., April 10.—Announcement has been made here that the Federal brick company, with headquarters in Providence, R. I., has just obtained an agreement with nine of the eleven brick firms of New Britain and vicinity, comprising the Central brick exchange of New Britain, by which it will control the output of the nine firms for the next five years.

The Federal brick company already controls a great part of the brickyards of Massachusetts and Rhode Island, and it is understood expects within the next three weeks to secure control of about 80 per cent of the brickyards in New England.

A. M. Young, of New York, and Pres. Studley of the Consolidated trust company of Providence, R. I., are interested in the Providence company.

The Federal brick company has just been granted a charter under the laws of the state of New York.

The members of the Central brick exchange who have signed the agreement are: C. P. Merwin brick company of Berlin, R. O. Clark, East Berlin; J. W. Holmes, New Britain; Donnelly brick company, New Britain; Standard brick company, New Britain; Powers Bros. brick company, New Britain; New Britain brick company, Parkville brick company, Parkville; Phoenix brick company, Elmwood.

Of the two remaining members of the exchange, the American brick company and the firm of Richard Murray, it is expected that the latter will also sign the agreement. These companies have an annual output of 80,000,000 bricks.

SOME SUGGESTIONS ON PUSHING THE SALE OF SAND-LIME BRICK *

BY J. J. MORONEY, CHICAGO, ILL.

There is no question in the mind of anyone operating a sand-lime brick plant as to the real merit, strength, beauty and durability of his product. All manufacturers have sincere confidence in the brick, and to successfully push their sale, it is only necessary to impart some of this confidence to the architect, contractor, or owner of the building. The question is as to the best way to do this. The brick themselves will justify his enthusiasm, and will back up any kind of reasonable guarantee, as is shown by the millions of sand-lime brick that have been put in walls during the last four years in this cold northern climate, which is very changeable, and especially hard on building material, owing to the alternate freezing and thawing.

I have a few suggestions to make as to the method used in pushing the sale of brick, which may be of some value to such of the sand-lime brick manufacturers as have never been connected with the manufacture and sale of clay brick. My only excuse for doing this is that I have been actively connected with the manufacture of fine pressed front brick for the past eighteen years, and am, of course, familiar with the methods employed by the dealers in fine building material, and the manufacturers of high grade dry clay brick, many of whom depend almost entirely on a shipping trade for disposing of their product.

In the first place, it must be remembered that brick never look as well in the pile as they do in the wall. When laid in the wall, only one face, and that the best one, is visible, and the effect of regularity adds greatly to the appearance of the brick, whether sand-lime brick or clay brick. It should therefore be shown to every intending purchaser that it is not a fair proposition to compare a loose pile of sand-lime brick on the yard with a well laid wall made from high grade pressed clay brick. For this reason it has been found a great advantage in selling sand-lime brick to build a little specimen wall, with white and different colored mortars, in the office or at the works of the manufacturer, where it would be protected from being defaced or marred. The brick show up much better in this way, and are a much fairer comparison with a wall made of clay brick. Of course, where it is possible to show your customer your own brick properly laid in a building, this is an even stronger argument; but it is not always feasible to take prospective purchasers long distances to show them brick in a wall. Therefore a specimen wall of this kind is always advisable, and especially on new plants.

Another plan that has been found of great assistance, especially in large cities, and where yards depend on shipping trade, is to get a number of boxes, just large enough to hold four brick laid in mortar with different colors of mortar, and using different colored brick so far as possible. After the mortar has set, the brick should be put into the box, and a fancy moulding should be tacked all around the edge of the box, so that it will project a little over the brick. The object of this is to prevent the brick from being taken out of the box, and defaced by handling. The name of the manufacturer should be stenciled on the top of the box, and such sample boxes left in the offices of architects, contractors and building material dealers; or sent by express to small towns where a trade is desired, and exhibited in some prominent store or hotel. This will be found to well repay the time and trouble, and the money invested, as such a box will prove a cheap and effective salesman. Samples put up in this way are practically indestructible; have somewhat the effect of brick laid in the

*Read at the last meeting of the National Association of Manufacturers of Sand-lime Products, recently held in Chicago.

wall, and are very attractive and striking in appearance, especially where there is a decided contrast in the colors of the brick.

Boxes of loose sample brick, such as are often sent out, are not nearly so effective, and the brick are liable to be taken out and defaced by careless handling, thus marring the edges and corners, and soiling the faces, so they are no longer an attractive advertisement. Such loose brick are also subject to all sorts of foolish, unauthorized and experimental tests by ignorant parties, which are prevented by boxing as above.

All tests of sand-lime brick ought to be made under the eye of the manufacturer, who understands the conditions, or according to his instructions, as otherwise, many unfair tests will be made which are unjust to the sand-lime brick. For instance, I have seen parties test a sand-lime brick for absorption by pouring water onto the flat side of the brick; or by immersing it all over in water, and leaving it several hours. I have even seen reports from college professors on sand-lime brick, where absorption tests have been made in the same way. People making such tests will then compare the results with the absorption of clay brick laid in the wall. Of course no brick laid in the wall is subject to any such conditions, as only one face of the brick is exposed to rains. The manufacturer should always test sand-lime brick in connection with clay brick that he has to come in competition with, and give each the same test. The easiest way to make a fair absorption test is to stand the clay brick and the sand-lime brick on edge on a table, face upwards, and sprinkle water on the faces of each. One of the best absorption tests that I know of was originated by Mr. Smith, of the Memphis Granite Brick Co., with which most of you are familiar. It consists simply in inverting a bottle containing a measured quantity of water on the face of each brick.

A proper and fair test which is made so as to bring the good points of the sand-lime brick to the attention of the customer, is a great aid in selling; but tests made by the ordinary individual who is ignorant of the conditions, is apt to be prejudiced, and makes the test after his own ideas are usually an injury rather than a benefit, and seldom do justice to the brick. It is therefore better, as above stated, to have as few sample brick as possible lying around loose, so as to be subject to such unauthorized and unjust tests.

Of course, a very great assistance to any manufacturer, and in fact, an indispensable necessity, is the proper printed matter; especially pamphlets showing cuts of buildings erected from this brick, the results of tests on his own brick as compared with clay brick, the opinions of architects and contractors, who have actually used them, and other valuable information which can be distributed much more widely than it is possible to send samples of the brick. This association could play a very important part in assisting all established factories in disposing of their brick, and in meeting the criticisms and arguments of their competitors in the clay brick industry by establishing a department of "Publicity and Education." The individual manufacturers in such a case should furnish the department with photos of buildings erected from their brick, together with particulars as to the number and kind of brick used, the architects' names, and testimonials; and also with information as to any special instances where objections have been brought up and overcome, or where these brick have been used for any special or new purpose. In this way a large amount of very valuable information could be collected, which it would be difficult for any one manufacturer to obtain without great expenditure of time and money. This department of the association could then distribute the information so collected to all the plants

several times a year, and could also furnish the newspapers with points of general interest that would tend to educate the public as to the merits and use of these brick. Such information coming from the association would have much greater weight and authority than if coming from any individual member, and it pays to advertise in this way.

The very greatest of all aids to the manufacturer in selling their brick will be the education of the public generally on a large scale as to the use and merits of these brick, such as has been done recently by the concrete industry for their own products. In this connection, I might say that the company I represent has just issued a book along the above lines, which is the result of a great deal of individual work, time and money; but any part of the information contained in it is at the disposal of any sand-lime brick manufacturer who wishes to bring out pamphlets for his own trade.

A great deal of criticism has been made of sand-lime brick, which is due solely to the inexperience of the operators of plants in handling, packing and shipping high grade bricks. These matters have been brought to a fine point by the makers of pressed clay brick, so that the brick reach the users, sometimes a thousand miles away, in as perfect condition as to the edges, corners and faces, as when they came from the kilns. This, unfortunately, is true of very few sand-lime brick as yet. Now, it is a fact that a sand-lime brick is a better shipper than a pressed clay brick, and a car contains fewer bats at the end of the journey. It is also a fact, however, that the sand-lime brick generally reach the user in much poorer condition as to edges and corners than clay brick, and this is caused almost entirely by imperfect packing and handling. Most sand-lime brick makers could get some valuable pointers by visiting a high grade clay brick plant, and becoming familiar with their methods of shipping and handling front brick. I have myself seen sand-lime brick on the yard, where the edges and corners were practically perfect, and the brick were high grade in every respect, and then have seen the same brick delivered on a job, battered and defaced, with edges and corners broken, which put them into the common brick class. All sand-lime brick should be handled with a brick lifter from the car to the sorting shed or freight car, and again from the freight cars to the wagon, and from the wagon to the job. All pressed brick in Chicago are handled in this way, and are carefully packed with hay, both on the cars and wagons. They are never tossed or dumped. I have myself seen sand-lime brick that were intended for outside finishing work dumped from the end of a dump cart in a pile.

Most of the sand-lime brick plants would be greatly benefited by paying much more attention to the methods of shipment than they do, and also by sending out samples in a more careful manner. I have known a number of instances where sample sand-lime brick were sent to the dealers to compete with pressed clay brick on a job for face work, and were sent in a barrel or box, without any packing whatever. Now the pressed clay brick manufacturers are very particular in packing their sample brick, which are shipped almost as carefully as china. They figure that the first impression made on the man opening the box is a lasting one, and perfect edges and corners have a great deal to do with the impression made.

When all is said and done, however, the thing that will be decisive in selling sand-lime brick is the excellence of the brick themselves. If a man makes a better brick than his competitors, it is only a question of time when he will get the bulk of the business in his locality. The few hints on selling above given, however, may perhaps enable some manufacturers to arrive at this point more quickly.

NEW INVENTIONS THAT ARE OF INTEREST TO THE CLAY MANUFACTURER

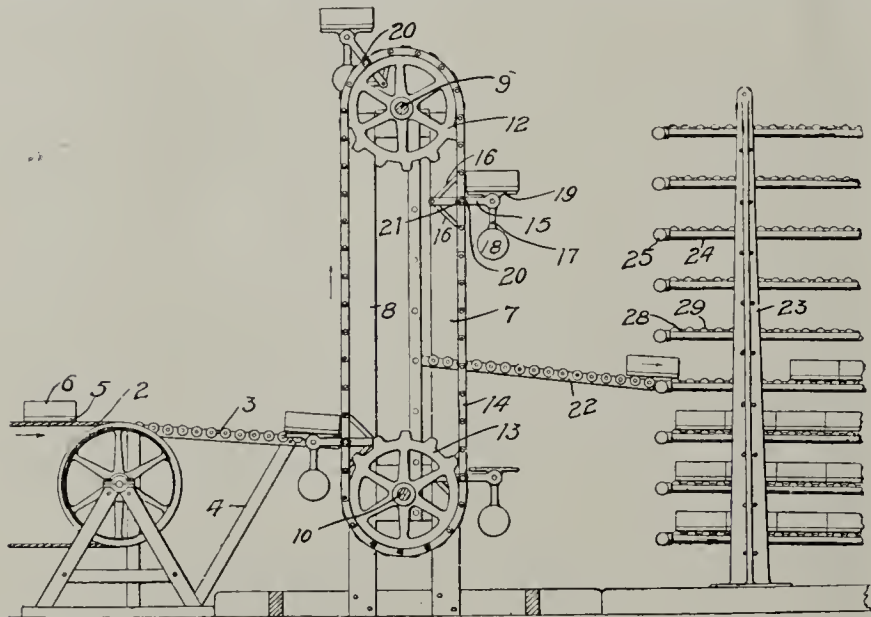
These new inventions are those that are especially of interest to anyone engaged in the line of building materials and their manufacture, or machinery to make them.

844,668. Composition for Bricks. Laurence Elkus, Indianapolis, Ind. Filed June 1, 1906. Serial No. 319,756.

Claim—In an artificial stone the combination of sand, hydrated lime and cement in substantially the proportions specified.

844,806. Brick-drier. Ira C. Jones, Minneapolis, Minn., assignor to Minneapolis Brick & Tile Co., Minneapolis, Minn. Filed Oct. 29, 1906. Serial No. 340,950.

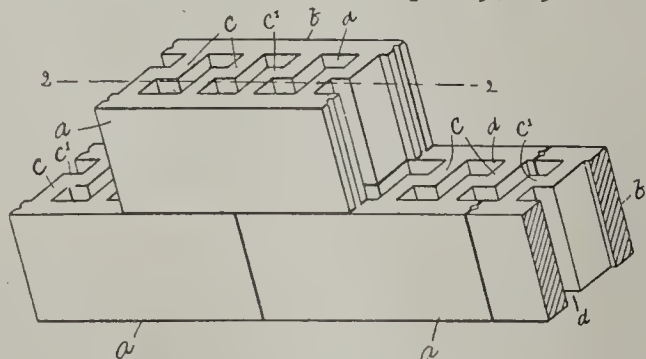
Claim—The combination, with a conveyor, of a gravity-carrier provided at the discharge end thereof in position to receive the loaded brick-pallets, an elevator arranged at the discharge end of said gravity-carrier and having pivoted carriers arranged to pick up the loaded pallets, a second



gravity-carrier on the down side of said elevator and whereto the loaded pallets are delivered by said elevator and a steam-drier composed of an upright frame and a series of steam-coils supported at different levels in said frame and having antifriction-wheels projecting above the tops of said coils and whereon the loaded pallets are discharged from said second gravity-carrier, substantially as described.

The combination, with a conveyor, of an elevator comprising belts operating vertically side by side, bars having sliding pivotal connections with said belts, links connecting the inner ends of said bars with said belts, pallet-carriers having weighted lower ends pivoted on said bars and adapted to pick up a loaded brick-pallet from said conveyor, a gravity-carrier provided on the down side of said elevator and whereto the loaded pallets are delivered, and a drier arranged to receive the pallet from said gravity-carrier.

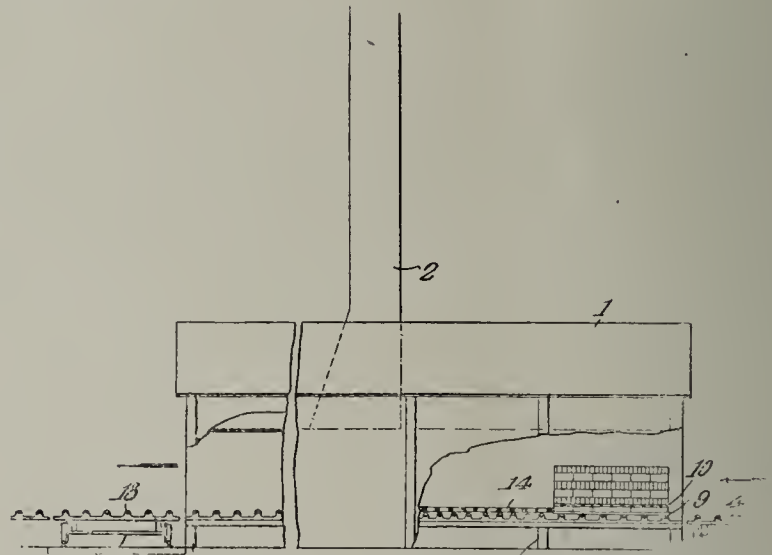
844,416. Building-block. Thomas Sewall and George M. Keene, Boston, Mass. Filed April 9, 1906.



Claim—A building-block composed of an outer wall and an inner wall and two or more partition-walls extending from said outer wall to said inner wall, each formed with an offset portion intermediate its length, whereby air-

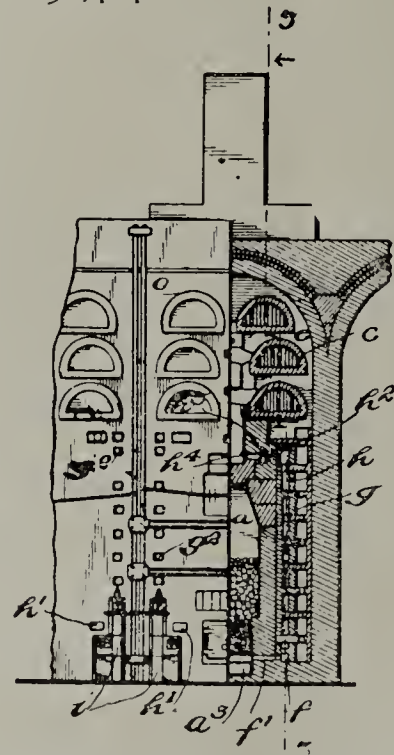
spaces are provided in the block at both sides of said partition-walls which extend from the outer to the inner walls, the air-spaces at each end of the block being one-half the size of the air-spaces within the block, substantially as described.

844,738. Brick drying and conveying apparatus. John H. McKenzie, Augusta, Ga. Filed Nov. 16, 1906. Serial No. 343,760.



Claim—In drying apparatus the combination with a housing having an inlet and an outlet at opposite ends, and brackets within the housing; of rails supported upon the brackets, each rail having pairs of integral upstanding ears thereon at predetermined intervals, a roller journaled between the ears of each pair, a pallet movably mounted on the rollers and comprising longitudinal strips, angle-irons secured upon said strips and bearing upon and overlapping the adjoining faces of the rollers, and slats connected to the longitudinal strips, and a heating device interposed between and above the rails and below the pallets.

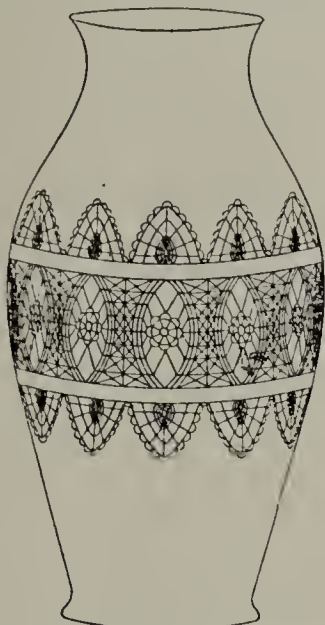
844,504. Apparatus for Regulating Combustion in Furnaces. Henry L. Dougherty, Madison, Wis., assignor, by mesne assignments, to Combustion Utilities Company, New York, N. Y., a Corporation of New York. Filed Feb. 1, 1904. Serial No. 191,404.



Claim—In an apparatus for regulating combustion in furnaces, the combination with a gas-producer furnace comprising the producer, combustion-chamber, flues for primary air and for secondary air and flues for waste gases, of passages or channels connecting the waste-gas flues with the primary gas-flues, said channels being provided with a damper-controlled opening for air and an adjustable injector projecting into said channels or passages.

844,516. Method of Decorating Enamel Ware, China, Porcelain, Majolica, Glass, Etc. Rudolf Gottlieb, Brunn, Austria-Hungary. Filed Dec. 15, 1905. Serial No. 291,837.

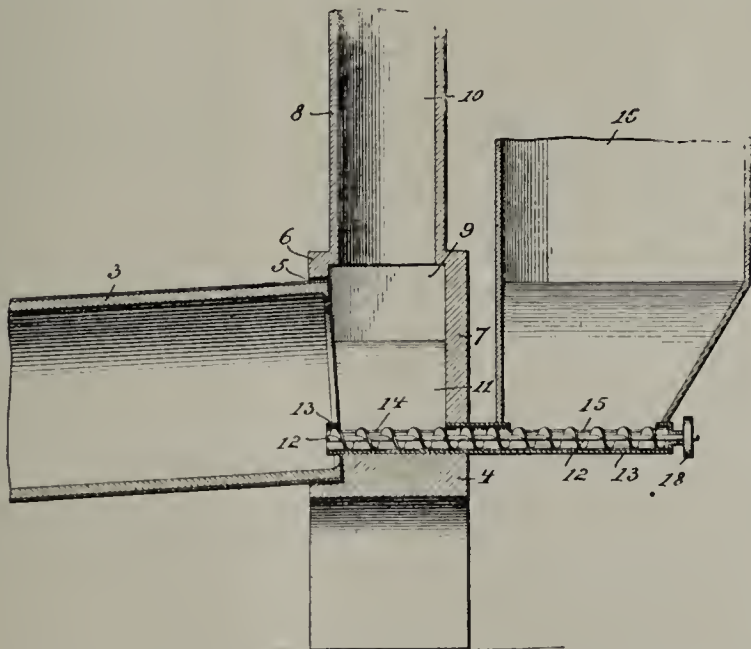
Claim—The method of decorating enamel, porcelain, china, majolica, and the like surfaces with a lace-like design, consisting in directly and closely applying an ornamental flexible pattern of lace or the like upon the surface to be decorated, then blowing upon the portions of said surface exposed by the perforations of the lace, a thick enameling paint of a contrasting color, removing the fibrous material, and permitting the applied enamel to harden.



The method of decorating enamel, porcelain, china, majolica, and the like surfaces with a lace-like design, consisting in applying an ornamental flexible pattern of lace or the like so closely upon the surface to be decorated as to prevent the flowing of enamel underneath said lace, then applying to the portions of said surface exposed by the perforations of the lace, a thick enameling paint of a contrasting color, removing the fibrous material, and permitting the applied enamel to harden.

844,623. Rotary Kiln. William C. Shiner, Catasauqua, Pa., assignor to James W. Fuller, Jr., Catasauqua, Pa. Filed Oct. 26, 1906. Serial No. 340,630.

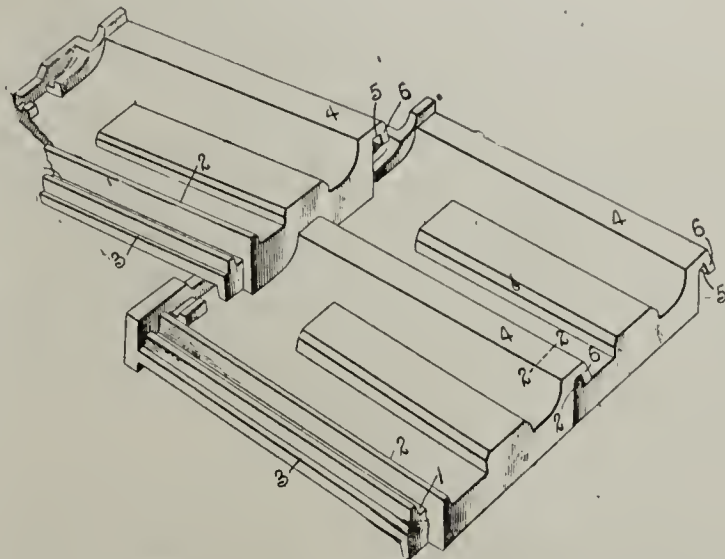
Claim—In a rotary kiln, a stack provided with a base having a chamber adapted to receive and to retain matter dropped from the stack, a kiln-tube connected with the base and terminating with its interior portion slightly below the chamber thereof, and movable means for positively conducting the descending matter from the stack-flue directly into said kiln.



In a rotary kiln, a kiln-tube, a stack having a base provided with a chamber, the walls whereof parallel to said kiln are downwardly inclined and terminate in a horizontal-

ly-arranged meeting portion, a casing located in said base having an opening arranged in alinement with the inclined walls of the chamber and terminating in said kiln-tube, the inclined walls of said chamber adapted to conduct matter dropping from the stack directly into said casing, and said conveyer, adapted to conduct the matter directly into said kiln-tube.

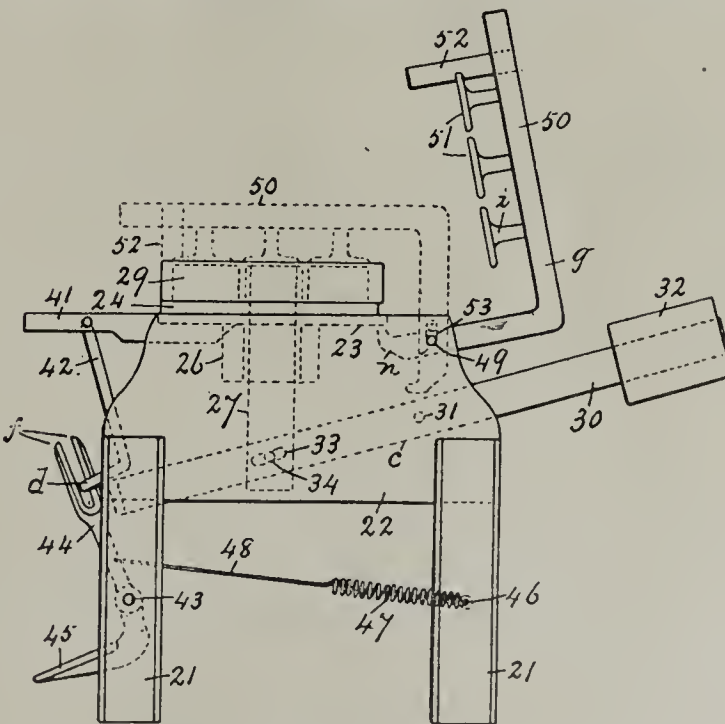
844,453. Roofing-Tile. Edward E. Johnston, St. Louis, Mo., assignor to Mound City Roofing Tile Company, St. Louis, Mo., a Corporation of Missouri. Filed March 24, 1906. Serial No. 307,865.



Claim—A roofing-tile provided at one edge with a longitudinally-extending gutter formed below the upper surface thereof and with an upwardly-projecting rib adjacent said gutter, and the other edge portion of the tile being provided with a recess on its underneath face to receive the rib of the adjacent tile, the underneath portion of the overlapping tile covering the gutter of the adjacent tile but not extending into said gutter; substantially as described.

845,194. Machine for Making Cement Brick. Henry Pocock, London, Ontario, Canada. Filed April 2, 1906. Serial No. 309,370.

Claim—In a device of the class described a supporting-frame including a table adapted to support a pallet, a mold



movable vertically above said table and provided with spaced side bars, a weighted lever pivoted intermediate its ends to said supporting-frame, a foot-lever swinging from said supporting-frame, and a link device swinging at one end from said supporting-frame and movably coupled to said foot-lever and provided with an intermediate offset for bearing over the free end of said weighted lever to maintain the molds in depressed position.

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"I like to read American advertisements. They are in
themselves literature, and I can gauge the prosperity of the
country by their very appearance."—William E. Gladstone.

When times are dull and people are not advertising is the
very time that advertising should be the heaviest. Ninety-nine
out of every hundred merchants advertise most when there is
least need of it, instead of looking upon advertising as the pan-
acea for their business ills.—John Wanamaker.

Don't trust to luck.

It is a good policy to leave a few things unsaid.

Set your stake and when you reach it, set it further
ahead. Try to reach it again and reset.

About the only difference between accepting a position
and securing a job is the matter of remuneration.

Nothing seems to succeed like the success of the man
who knows what he wants and then goes right after it.

About all the consolation some men get out of losing
their money is the belief that they are dead game sports.

When a man attributes his sneers to the taking advan-
tage of an opportunity the opportunity is usually but an-
other name for an easy mark.

If you have not already sent in your subscription for the
CLAY RECORD for this year you should do so now. The
CLAY RECORD is the only clay journal in America that is
printed twice a month. It keeps you posted on current
events in the clay field. Can you do without it for one
little dollar?

POTTERY TRADE NEVER BETTER.

East Liverpool, O., April 15th.—Business with the manu-
facturing potters in the western district was never better.
Every pottery is running to its capacity and orders are be-
ing filled rapidly. Much attention is being paid to business
that has to get out at once.

At Wellsville similar conditions prevail, the four pot-
teries there being rushed. Samuel Simbella, who was em-
ployed as a presser at the United States pottery has left to
take a position with the Riverside plant at Wheeling. It is
reported a number of other pressers from that district will
soon go to the Wheeling shops.

Six boys, all under age, who had been given employment
by men working at the United States Pottery, at Wells-
ville, were hauled up before Mayor Wallace L. Fogo, of
that city and fined. The men who gave these boys work
were also told to appear in court. A fine of \$25 can be
assessed.

A new seven-kiln pottery is in course of erection at El
Reno, Okla. Those interested from the east are Charles
Mahan, formerly of this city, and whose brother is em-
ployed at the Smith-Phillips plant here and W. H. Moore,
formerly of Salineville. General ware is to be made.

The mammoth plant of the Homer Laughlin China Com-
pany, at Newell, W. Va., across the Ohio river from this
city, will be working full in every department in a month's
time, meaning, 2,000 people will be employed under one
roof. The offices are nearing completion and will be ready
for occupancy within a few weeks. These will occupy two
floors.

A novelty connected with this plant is the manner in
which the employes will be paid. Four large booths have
been erected, near the main offices. Employes will walk
west past the offices and after receiving their envelopes
will turn south and pass out of the main office vestibule.
The arrangement will save considerable time and the wages
can be paid out within a remarkably short time.

It is contended throughout the district that the Goodwin
Pottery, of this city, is the only competitor of note of the
Warwick Pottery of Wheeling, in the manufacturing of
high class art goods. Much regret was expressed here
when the news of the Warwick fire was received and now
that the plant is rebuilt friends of the company here believe
that the loss of the company to its decalcomanias was almost
as great as the loss on the building.

The number of idle potteries in the country at the pres-
ent time is not generally known. There are two idle pot-
teries at Columbus, the Worthington and the Bell Co.'s
plants, the Acme at Crooksville, O., Dresden China Co.,
Salineville, O.; Derry Pottery Co., Derry Pa.; Ford City
Pottery, Ford City, Pa., and one small one at New Brighton.

The announcement is made that the Acme pottery will be
sold April 9, by the trustees for the stockholders, and the
Ford City plant has been advertised for sale by the Penn-
sylvania courts for April 16.

It is reported that one or two western plants will be built
this year—probably in Missouri and located near vast de-

posits of clay. It is said some Columbus and St. Louis capitalists are back of the movement.

The number of employes of the Crooksville China Co., at Crooksville, O., is to be increased from 170 to 250 as soon as possible. Improvements and additions costing not less than \$15,000. The annual production of this plant after improvements are completed will be worth not less than \$325,000. Two decorating and one bisque kilns are to be added also. Work rebuilding the plant of the Electric Porcelain Co., which was destroyed by fire is in progress. The company hopes to be able to ship goods within three months. The kilns were saved and this will help in starting the plant earlier.

BUILDING OPERATIONS FOR MARCH.

Reports from fifty-five leading cities of the country officially reported and tabulated show a gratifying and widely distributed building activity for March. In the cities reported thirty-one show a gain as compared with the corresponding month of 1906, while twenty-one indicate a loss. In the aggregate the loss amounts to 3 per cent. This is decidedly encouraging when compared with the showing made in the preceding month, when the total loss, as compared with March, 1906, was 20 per cent. The greatest loss reported is in New York. Manhattan lost \$4,952,621 and the Bronx \$1,790,535, while Brooklyn made a gain of \$1,414,637, making a total loss for Greater New York of \$5,328,519, or over three millions more than the total loss of the fifty-two cities. The loss in New York is clearly chargeable to previous large building operations and the stringency of the money market which makes it difficult to place large building loans. Taking this into account the showing is excellent, a marked improvement over the preceding month. Chicago, the city next on the list from the standpoint of volume of business, reports a gain of 33 per cent. The percentage of gain in other leading cities is shown by the following figures: Allegheny, 96; Birmingham, 112; Buffalo, 45; Cleveland, 51; Detroit, 80; Harrisburg, 9; Hartford, 21; Indianapolis, 149; Minneapolis, 38; Memphis, 25; Mobile, 225; Paterson, 57; Rochester, 31; St. Louis, 53; St. Paul, 30; Scranton, 50; Seattle, 107; Syracuse, 60; Salt Lake City, 316; Topeka, 153; Washington, 23. The following figures show percentages of losses: Cincinnati, 4; Denver, 18; Duluth, 62; Grand Rapids, 9; Kansas City, 18; Louisville, 32; Los Angeles, 41; Milwaukee, 1; Newark, 32; New York, 23; Omaha, 23; Philadelphia, 31; Pittsburgh, 5; Spokane, 8; Toledo, 51; Tacoma, 20.

OBITUARY

Dennis J. Clahane, president of the Hanover (O.) Pressed Brick Co., and vice-president of the West Side Dime Savings bank, Columbus, Ohio, many years a prominent business man on the west side, died of heart disease at Mt. Clemens, Mich. He was 53 years of age.

While William Brodkorb, age 39 years, was enjoying his noon day meal with his family at his home, 1624 South Parsons avenue, Columbus, Ohio, he fell dead in his chair. He was a brick manufacturer and was well known. He is survived by his wife and six children.

ACCIDENTS, DAMAGES AND LOSSES

An explosion of gas occurred at the Robinson Clay Product Co.'s plant No. 2, and two employes were badly burned.

An explosion in the brick at Wellsville, Ohio, which was caused by the flood, resulted in the death of three Italian workmen.

Jasper Easterday was crushed to death by falling shale at the shale pit of the Western Brick Co. at Danville, Ills. He leaves a wife and family.

John Dysarz, brick manufacturer, Detroit, Mich., was adjudicated a bankrupt in the U. S. district court. His liabilities are \$1,672 and assets \$3,468.

William W. Frazier, of Philadelphia, has brought suit to foreclose a mortgage of \$35,000 against the Schuylkill Valley Clay Co., at Shoemakersville, Pa.

The Silicated Brick Co., Denver, Colo., has filed a suit for \$50,000 damages against the Roxbury Land Co., on charges of bribery and a fraudulent lease.

H. A. Spencer was caught in a pulley at the Albert Lea (Minn.) Brick & Tile Co.'s plant and so badly injured that it was necessary to amputate one of his limbs.

William Haase, who was convicted of setting fire to the Bennett Pottery Co.'s plant at Baltimore, Md., has been sentenced to eighteen months in the penitentiary for arson.

Four workmen were buried under bricks at the plant of the Phoenix Brick & Construction Co., St. Joseph, Mo., and two, Henry Martin and Neil Lawson, were seriously injured.

Eighteen persons lost their lives in the fire and flood at the Warwick Pottery Co.'s plant at Wheeling, W. Va., and there were a number of other fatalities. The loss is over \$3,000,000.

The trustee in bankruptcy of the Cleveland Brick Co., Canton, Ohio, has filed a petition asking for authority to sell the plant at either public or private sale. The trustee has an offer of \$46,000.

The Hydraulic Press Brick Co., Cleveland, Ohio, has brought suit against the Independent Stone Co. for \$10,000 damages, claiming it blocked a creek and caused it to overflow and flood the kilns.

W. C. George has filed suit against the LaHarpe (Kansas) Shale Brick Co. for \$1,905 damages for personal injury sustained in an accident at the plant. A pile of shale fell on his leg and crushed it.

The Chicago Retort & Fire Brick Co. have let the contract for the buildings for their new plant at Ottawa, Ills. The buildings will be of brick and 120x400 feet long. The plant is expected to be completed in July.

The receiver of the Veedersburg (Ind.) Clay Co., has brought suit against Homer Hood, a wealthy resident of Toledo, O., for \$50,000, alleging he was one of the original subscribers to the stock which was not fully paid in.

E. E. Conner, an employee of the Barr Clay Co., Streeter, Ills., was caught in the machinery and bruised and lacerated in a very serious condition. He is the night engineer and his clothes caught in a part of the engine. He is 70 years old.

FIRE! FIRE! FIRE!

A fire at the M. Davilaar Brick Works at Milwaukee, Wis., caused a loss of \$1,000 to the plant.

The plant of the Ostrander Fire Brick Co., at Troy, N. Y., was visited by a \$2,000 fire. Plant partly covered by insurance.

The Howard-Park Brick Co., Chattanooga, Tenn., was damaged to the extent of \$2,000 by fire, fully covered by insurance.

The grinding department of the Castalia (O.) Portland Cement Co., was burned and caused a loss of \$50,000, fully covered by insurance.

The Memphis (Tenn.) Hydraulic Brick Co., was slightly damaged by fire, which adjoined the Magnolia Stove Works. The loss is estimated at \$80,000.

Fire destroyed the plant of the Dominion Paving & Construction Co., Toronto, Ontario. The loss is placed at \$40,000, which is fully covered by insurance. Roy Van Vlack is the manager.

Fire damaged the plant of the Omaha Brick Co., Second and Hickory streets, Omaha, Nebr., to the extent of \$2,000. The company manufacture its own gas for use in the kilns and the blaze caught fire to the gas plant.

A fire broke out in the Miller Bros. Brick Works, Charles street, Alleghany, Pa. The loss is about \$1,000, covered by insurance. The plant has been idle for some time and it was thought it was set fire to by tramps.

The plant of the Chicago Retort & Fire Brick Co., at Ottawa, Ills., was completely destroyed by fire. The loss is estimated at \$10,000. It was partly covered by insurance. Contracts have been let for an entire new plant.

The South River Brick Co., Atlanta, Ga., lost their Bottom plant by fire. All the machinery was destroyed. Loss is estimated at \$35,000, partly covered by insurance. J. M. Stephens is president of the company, E. R. Thornton secretary and treasurer and Ald. W. A. Hancock, general manager.

\$1,200,000 CEMENT PLANT IS CERTAIN.

F. E. Wear and W. E. Murlin, president and vice-president of the Kansas City (Mo.) Portland Cement company, were in Des Moines and practically concluded negotiations for the establishment of a \$1,200,000 cement plant with a capacity of 2,500 barrels per day at Harvey, Iowa. W. E. Foshier of Harvey and Winfield Smouse of Washington, Iowa, as well as three or four Des Moines capitalists are interested in the project.

Several hundred men will be employed by the company after the plant is thoroughly established.

Messrs. Wear and Murlin, who have had many years experience in the cement business, optioned a tract of 1,200 acres near Harvey, after making a thorough investigation of the limestone and shale deposits. The quality of these, and the fact that fine deposits of coal have been discovered on the tract, make Harvey an unusually desirable location. It is estimated that the plant will use about 250 tons of coal daily, so that the saving in freight on fuel will, the promoters claim, amount to about \$300 per day.

SPECIALIST IN BUILDING MATERIALS REPORTS ON SAN FRANCISCO FIRE RESULTS.

The Brick Construction Association of Los Angeles, Cal., which is composed of the manufacturers of burnt clay products, has issued a album containing many excellent photographs of scenes in San Francisco immediately after the great fire in April of last year. These show that buildings of brick suffered very little during the conflagration.

In an introductory notice are the following statements taken from a report of investigations made by F. W. Fitzpatrick, executive officer of the International Society of Building Commissioners.

"Fill in the voids of your columns with brick. Fill your floor spans with deep, flat arches of porous tile, the deeper the better; or, if great weight is no disadvantage, then use deep arches of concrete, but let there be a tile, protecting ceiling surface to the latter, or well below the arches a suspended ceiling of metal lath and plaster. In every case have the soffits and projecting members of your floor frame covered with fireproof tile of two thicknesses.

"Build your outer walls from story to story of brick or concrete, but face it internally with hollow brick and externally with a good quality of well-burned brick. Where ornament is desired, use well-made terra cotta. Don't be afraid of the quantity of the material; it is only the thin, sharp angles, and uneven, poorly baked surfaces that scable off in a fire. With an even thickness in ornament and plain, plenty of ribs, and properly burned, terra cotta will stand any fire you expose it to. The use of granite, stone and marble, wherever fire can get at them, will hardly be looked upon with much favor by San Franciscans. Use good cement mortar in your walls. Tie them and bond them thoroughly and make them close kin to the frame, not mere distant relatives. Don't be afraid of using plenty of steel in your terra cotta cornices, tie them in, anchor them, and make them part of your building, not merely an easily dislodged, removable lid."

UNITED STATES HOLLOW TILE INDUSTRY.

Hollow tile was first used in this country in the Vancolears flats, New York city, erected about 30 years ago. It was the first tile of that style made in the United States. The experiment was successful and in 1877 there were 100,000 tons of hollow tile fireproofing material sold in the United States. Today the output exceeds 2,500,000 tons a year, a plant in Perth Amboy alone having a capacity of 20,000 tons a month.

A BRICK FOUND THAT WAS MADE IN 1632.

A brick bearing the date of 1632 has been found in a very old building at Jamestown, N. C. The brick is hard burned, the size of the ordinary brick of today, but almost twice as heavy and shows very little of the wear and tear of time. The texture of the brick is very close, and the clay is much finer than that found in that section of the country.

This Jamestown settlement is almost as old as that of Jamestown, Va. It is thought that this brick is one that was brought over from England or some foreign country as a sample.

CLAY DEPOSITS IN TEXAS PROMISE RESULTS EQUAL TO FOREIGN GRADES

Chicago, April 15.—Milton Wolf, president of the United Kaolin Properties Co., left this city to secure a warehouse in New York for an enterprise which, he declares, promises to place the United States upon a par with France for the successful manufacture of fine china. The importation of fine china from France to America during the year 1905 amounted to \$17,000,000.

Seemingly inexhaustible deposits of kaolin, it is declared, have been discovered in the town of Leakey, Edwards County, Texas, which is of so rare a quality as to menace not only the monopoly, but the prestige for quality of the French product. The Texan kaolin combines pure whiteness, strength, translucency, lightness and plasticity.

Its discoverers claim for it the ability to turn out as fine, if not finer china than the finest French Haviland ware. It becomes translucent with a much lower degree of heat application than the French clay, has a purer whiteness and a far greater durability.

The American promoters are completing the 40 miles of railroad from the main line of the Southern Pacific Railroad at Sabinal to the deposits at Leakey.

\$130,000 IN IMPROVEMENTS WILL BE ADDED TO PLANT OF KAOLIN AND CLAY PRODUCTS COMPANY

When all the big improvements which are now contemplated for Dry Branch, Ga., are brought to a successful completion that little burg will assume quite a position in the manufacturing world.

The Atlanta Mining and Clay Company, Macon, is now adding an immense washing plant to their already large equipment. Fifty thousand dollars will soon be expended in the construction of a modern refinery. Twenty-five additional dwellings for white laborers will be built; additional machinery will be installed and a storage building with a capacity of 175 cars is planned. The improvements contemplated will amount to over \$130,000. In keeping with the improvements, the Macon, Dublin and Savannah Railroad will soon break ground for a new side track to the plant.

This company is composed of an enterprising lot of persons and it looks as though Dry Branch will be converted into a new town. Mr. Y. A. Gresham, general manager, will move his family from Atlanta to Macon at once, and will direct the operations of the concern largely from the Central City.

The Atlanta Mining and Clay Company is not alone in occupying the field at Dry Branch, as there are the American Clay Company, Georgia Kaolin Company, Mandle Clay Company, J. P. Carlton Company, all of whom are in a most prosperous condition and promise to increase their plants in the near future.

These concerns have united and will expend \$500 in an exhibit at the Jamestown Exposition. The exhibit will be carefully prepared by competent hands, and will represent both crude and finished products from Georgia kaolin and clay, including specimens of paper, oil cloth, china, wall paper, books, newspapers, etc.

MRS. SHAW SECURES CONTROL OF THE NORTH JUDSON SAND LIME-BRICK WORKS

A deal of considerable importance has just been closed, after a month of negotiating, between the Indiana Sand-lime brick company of North Judson, and the Shaw System Co., of Chicago, at the head of which is Mrs. F. D. Shaw and a number of western capitalists. Mrs. Shaw is the inventor of a new process of enameling brick, which is claimed to be superior to any method now in existence. She is interested in a number of brick plants in the country and has a laboratory at Trenton, N. J.

The Shaw System Co., will use the products of this plant and will invest about \$15,000 in a kiln for the enameling of the brick with a porcelain finish. The new firm will also make paving brick. Only the best product will be put out—brick which will sell for from \$20 to \$80 per thousand. The brick made by the Shaw Co., have been passed on by building inspectors of Chicago and other competent judges.

Mrs. Shaw and her attorneys had made several visits to North Judson plant before consummating the deal and they declare the plant there to be the most ideal one they have ever visited. They will invest between \$40,000 and \$50,000 and will increase the capacity of the plant to 100,000 brick a day. This will mean much for North Judson as it will bring men here from all over the country and the product which will be shipped out will make the town known far and wide.

USE WATER FOR LIGHT AND POWER

The Provo (Utah) Pressed Brick Company filed application with the state engineer to appropriate 100 second feet of water from Provo river in addition to their present supply.

The diverting works are to consist of four-foot gates, three in number, side by side, and a diverting channel and tail race. The length of the channel is to be 4,591 feet and the tail race 1,339 feet. Two turbines will be installed to develop 75 horse power, to be used for electric lighting and propelling machinery at the company's plant.

DIANA AND BEAUMONT BRICK PLANTS HAVE BEEN MERGED

A consolidation of the Diana Brick and Tile company and the Beaumont (Texas) Brick company has been effected by the incorporation of the Gulf States Brick company, of which the incorporators include the leading stockholders in the two companies named. The incorporators are Newton R. Wilson of Mexico, Sam Park of Beaumont, E. M. Loeb of New Orleans, T. J. Feibleman of New Orleans and A. C. Wurppel of New Orleans. The capital stock of the new concern is \$250,000. S. A. Hiller of New Orleans is the secretary of the company.

The Diana company owns a large brick plant at Loeb on the Sabine and East Texas railroad and the Beaumont company's plant is located a few miles north of the city. By the consolidation the interests of the plant will be increased, the capacity will about be doubled, and many other improvements will be made. It will give this city one of the largest brick and tile plants in the South and the brick which have been turned out by both plants have made a fine impression wherever shown. A red pressed brick is made, which it is claimed is superior in quality and looks to the St. Louis red pressed brick.

SAND OR LIME BRICK OR BLOCK NEWS

The Ceylon (Minn.) Tile Works started up the first of the month making cement tile.

A. W. Barker, Fort Pierre, S. Dak., has put in a cement brick machine at that place.

Burnett, Wisconsin, is to have a cement brick plant; same will be at the junction and have good railroad facilities.

Col. Joseph H. Stahl, Los Cruces, N. M., is putting on a hydraulic sand cement brick machine to make composite brick at the rate of 15,000 daily.

The plant of the Saginaw (Mich.) Pressed Brick Co., at Carrollton, Mich., has been dismantled and the machinery has been disposed of and moved from the city.

The Seminole Press Brick Co., Jacksonville, Fla., is said to be making a great hit with their new brick and the demand for their product is greatly increasing.

The Cheyenne (Wyoming) Cement, Stone & Brick Co., has been organized and will build a cement brick plant to make 10,000 brick daily. W. S. Thomas is the manager.

Leon Locke, secretary of the Board of Trade at Lake Charles, La., is figuring with parties to erect a sand lime brick plant at that place, estimated to cost complete \$2,500.

The Enid (Okla.) Cement Pressed Brick Co., reports orders so heavy that they were obliged to purchase a second machine and are now installing the same. Max Hoover is the proprietor.

Rapid progress is being made on the sand lime brick plant which is being built at Ballstone Spa., N. Y. Edwin G. Kastenhuber the manager, has been sick at his home in Schenectady.

The Columbia Silica Brick Co., 419 Market St., Camden, N. J., has been incorporated with \$125,000 capital stock. Incorporators are John A. Wilson, George S. Houghton and M. J. Dain.

The Cape Henry Granite Brick Co., Norfolk, Va., has been incorporated with \$90,000 capital stock. R. C. Marks is president, M. L. T. Davis, vice president, R. C. Marks, Jr., secretary and treasurer.

The Graham Construction Co., Hattiesburg, Miss., has been incorporated with \$60,000 capital stock and will manufacture blocks and brick from sand. H. A. Camp and W. O. Graham are the incorporators.

The Mississippi Cement Tile Co., Jackson, Miss., has been incorporated with \$10,000 capital stock. The incorporators are F. B. Fox, G. L. Ragland, and others. They will erect at once a large plant for making cement tile.

Charles L. Wagner, of Charlevoix, Mich., and others are organizing a sand lime brick company for that place. The city council has voted the land to the company and the building must be up and plant in operation by July 1, and to operate five years, employing a minimum of twelve men. They will make 20,000 brick daily.

The plant of the Fremont (O.) Pressed Brick Co. is to be removed to Temperance, Mich., where a company has been organized known as the Toledo (O.) Granite Brick Mfg. Co. The officers are: Lewis Hartman, of Woodville, president; Henry Edmeister of Toledo, vice president, and Samuel Wallace of Temperance, secretary and treasurer.

MISCELLANEOUS ITEMS

James R. Nolan, Senoia, Ga., will establish a brick making plant near that place.

J. L. Taliaferro, 209 No. 29th Street, Richmond, Va., wants a 25,000 capacity stiff mud brick making outfit.

The Red River Valley Brick Corporation, Grand Forks, N. Dak., is shipping 8,000,000 brick to Minot to be used in a new mill.

The Wausau (Wis.) Brick & Tile Co., has filed an increase of its capital stock from \$12,000 to \$20,000 with the state secretary.

N. S. Basom of Groton, S. Dak., has made arrangements to put in a 40,000 capacity brick works. The outside interests are from Minnesota.

The Plymouth Clay Products Co., Ft. Dodge, Iowa, has been incorporated with \$250,000 capital stock. They will build a new sewer pipe plant.

J. G. McDonald, McIntyre Gulch, Boise, Idaho, has received the machinery for the brick making plant and is now preparing to make brick.

The Union Brick & Tile Co., Warsaw, N. C., has been incorporated with \$50,000 capital stock by D. F. Faison, A. M. Faison and J. E. Richwine.

The Stein-Williams Brick Co., Youngstown, Ohio, have purchased a site and are working on remodeling the buildings so as to make 25,000 brick daily.

The Alexis (Ills.) Brick & Tile Works is now being cleaned up in readiness to start. A large boiler will be installed and other improvements made.

The Benton Harbor (Mich.) Brick & Tile Co., will secure the power to operate its plant from the light and power company to drive all its machinery.

The Virginia Brick Co., Chilhowie, Va., will begin the manufacture of brick in forty days at their new plant. Joel Booth and J. J. Dungan are the owners.

C. E. Drew, C. C. Binner and John Herbst, all leading citizens of Bunker Hill, Ills., are planning for a paving block and brick factory, and are now visiting works of this kind throughout the state.

At Richmond, Ind., a \$25,000 brick plant will be built. E. Louck, R. Sedgwick, C. E. Shiveley, C. S. Markley, A. D. Gayle, T. H. Hall, J. W. Morrison, Geo. W. Miller, J. L. Rupe, F. M. Taylor and others are interested.

Ex-Senator Henry Burkhardt, of Wabasha Co., Minn., may establish a brick plant at Crookston on land owned by his son, Otto Burkhardt, proprietor of the Cleveland House. Mr. Burkhardt is an experienced brick maker.

The Tennessee Ball & Sagger Clay Co., Morganfield, Ky., has been organized with \$250,000 capital stock and will operate nine clay properties in the southern states. Harry Watkins, of Mayfield, Ky., is the president of the company.

The Spring City (Pa.) Brick Works of which J. Frank Boyer is the principal owner, has been started up after a four months' shut down. The Crumlic system of drying and burning has been installed. The company has orders ahead for the entire year.

The Georgia Brick Co. will soon have their plant built at Adairville, Ga.

The Goodwin Brick Works, at Minonk, Ills., are being improved to the extent of \$6,000 this spring. A new engine and boiler and steam drying plant is being added.

P. J. Fish, formerly travelling representative for Taplin, Rice & Co., Akron, Ohio, has accepted a position as manager of the Whitehall Sewer Pipe & Stoneware Co., White Hall, Ills.

The Diamond Fire Brick Co., Canon City, Colo., intend to make all kinds of fire brick in their new plant which will soon be completed. All the various shapes used in the blast furnaces, and heretofore coming from the east will be made.

Oliver St. Germain, Havre, Montana, has leased the brick yard for three years from Joe Gussenhoven, and will operate it to its fullest capacity. Extensive improvements are to be made and thoroughly up to date machinery will be installed.

The Richmond Brick Co., Richmond, Ind., has been incorporated with \$25,000 capital stock. Ebon Louck is president, Richard Sedgwick vice-president, A. D. Gayle, treasurer and secretary. They have bought the old Mather and Kelsey site and machinery in West Richmond.

E. T. Murphy has resigned from the B. F. Sturtevant Co.'s New York branch to again accept a position with the Buffalo Forge Co., operating from their New York City branch. Mr. Murphy received his early training in the blower business with the Buffalo Forge Co., at their Buffalo works, and later at their branch in Philadelphia.

S. E. Hall, of Bangor, is considering the building of a brick works at Ellsworth, Maine.

Common brick at Des Moines, Ia., are selling at from \$8.00 to \$8.40 per thousand with a splendid demand.

W. H. Dail, Jr., Greenville, N. C., has bought twenty acres of land and is now building the buildings for a brick plant with a capacity of 20,000 brick daily.

Plans are being made for Pittsburg and Wheeling capitalists to build a plant at Follansbee, W. Va. The plant will be a big one and be in operation sometime during the summer.

Strain & Chrissinger have located permanently at Mt. Pleasant, Iowa, where they bought five acres of clay from Dr. J. O. Ball. The factory will be in operation the first of June.

The Galena (O.) Clay Products Co. has been incorporated with \$10,000 capital stock. The incorporators are J. J. Adams, James Rose, W. C. Roberts, E. B. Cole and E. C. Bennett.

C. E. Poston started on the work of building the new brick plant at Attica, Ind., April 1. This will be a twelve-kiln plant from the start and increased as rapidly as possible. They will make "Oriental" and "Postonian" brick.

The Dina Brick & Tile Co. and the Beaumont (Texas) Brick Co. have been consolidated under the name Gulf States Brick Co., capital stock \$250,000. Newton R. Wilson is president; E. M. Loeb, vice president, and R. M. Hollowell, treasurer; S. A. Hiller, secretary. Offices at New Orleans and Beaumont.

The New San Francisco Continuous Kiln

is the only CONTINUOUS KILN having regenerative furnaces for burning bricks with CRUDE OIL or POWDERED COAL

This kiln has the greatest thermic efficiency, for the following reasons:

FIRST—A perfect system of regulating the velocity of gases through the kiln.

SECOND—No excess of air, such as is required in UP-DRAFT or DOWN-DRAFT kilns.

THIRD—Perfect air recuperation.

FOURTH—Perfect combustion.

FIFTH—Loss by radiation reduced to a minimum.

SIXTH—No cold air admitted with the fuel in the combustion chambers.

SEVENTH—Heat generated instantaneously.

EIGHTH—No delays, no waiting for the coal or other fuel to ignite, as in the ordinary continuous kiln.

NINTH—The burning bricks receive the full benefit of all the heat produced, as the combustion chambers are contiguous to the kiln.

TENTH—The amount of heat generated is at least 100% greater than that produced by coal screenings dropped between the burning bricks in a given length of time, in the ordinary continuous kiln.

CONSTRUCTION

This kiln can be constructed with 10% less material than the ordinary continuous kiln.

The outside and inside walls, etc., are left down to a point four feet below the coal-floor line of the ordinary continuous kiln, the arch only being built above this line.

There are no BAGS or BAG WALLS to take down and rebuild when the kiln doors are opened and sealed up.

Has no complicated system of flues.

Has no complicated system of GAS PRODUCERS.

Can be arranged for utilizing the surplus heat with a blower, no chimney being required in this case.

This system applied to a HOFFMAN KILN will increase its capacity at least 100 per cent.



WILLIAM A. BUTLER, Patentee, 34 Parkside Ave. San Francisco, Cal.

James T. Harris, Spartanburg, S. C., is in the market for brick-making machinery.

Frank H. Stover, Waynetown, Ind., is moving his brick works to a new location south of town.

John J. Burns has taken charge of the Coucher McAdoo Co.'s sewer pipe plant at East Palestine, Ohio.

The Red River Valley Brick Corporation, Grand Forks, N. Dak., has increased its capital stock from \$50,000 to \$150,000.

The Humboldt (Kansas) Brick Mfg. Co. have received a new 350 h. p. Corliss engine and are now installing it in their works.

The Atlanta Mining & Clay Co., Macon, Ga., will make extensive improvements to its plant at Dry Branch that will cost \$130,000. T. A. Gresham is the manager.

Krick, Tyndall & Co., Decatur, Ind., will increase their capital stock from \$75,000 to \$100,000 and build new building, install new machinery and so arrange their plant that they can operate it the year around.

The Houma (La) Brick Co., Ltd., has been organized with \$10,000 capital stock. The officers are Arthur A. Bonvillain, president; A. J. Bonvillain, treasurer, and M. H. Webb, secretary. They propose to make 15,000 brick daily.

The White Earth (N. Dak.) Coal Mining, Brick & Tile Co. has been incorporated with \$200,000 capital stock. Incorporators are, Clark E. Shepard, W. E. Arnot, W. C. Gibb, Jr., Robert Wilson, S. T. Key, Richard Slater, and Heskin Slater, all of White Earth

The Lindenwald Brick Co., Hamilton, Ohio, which was incorporated some time ago, began operations the first of this month, making 20,000 brick daily.

The Kaolin Products Co. has been incorporated at Portland, Maine, with \$1,500,000 capital stock. J. E. Manter is president and C. E. Easton, treasurer.

The F. Pitts Clay Co., Lisbon, Ohio, has been incorporated with \$10,000 capital stock by J. M. Elliott, P. M. Crawford, P. A. Dickey, John R. Ells, and A. Redick.

The Commercial Club, of Mankato, Minn., are having the clays of that neighborhood tested for making drain tile and pressed brick. J. H. Spencer is the secretary.

The Yorkshire (Ohio) Tile & Brick Co. has been incorporated with \$10,000 capital stock by C. E. Russell, L. A. Hess, J. J. Bulcher, F. A. Fisher and T. H. Strecker.

The U. S. Brick Co., Tell City, Ind., has been incorporated with \$80,000 capital stock. The incorporators are Chas. F. Herrman, Royden E. Weaver and Nicholas Goffint.

The Kaempff Shale Brick Co., Kansas City, Mo., has been incorporated with \$30,000 capital stock. Incorporators are Walter A. Hammond, secretary and treasurer and Fred C. Kaempff, president. They have bought the Stukenberg Pressed Brick Co.'s plant and will increase it to 100,000 capacity daily.

The American Clay Products Co., whose plant is at Roanoke, Ills., is now running the plant at its fullest capacity. New machinery, drying rooms and other improvements have been added. Geo. H. Willems who formerly owned the plant is the superintendent. Martin W. Lauer, of Chicago, is the president.

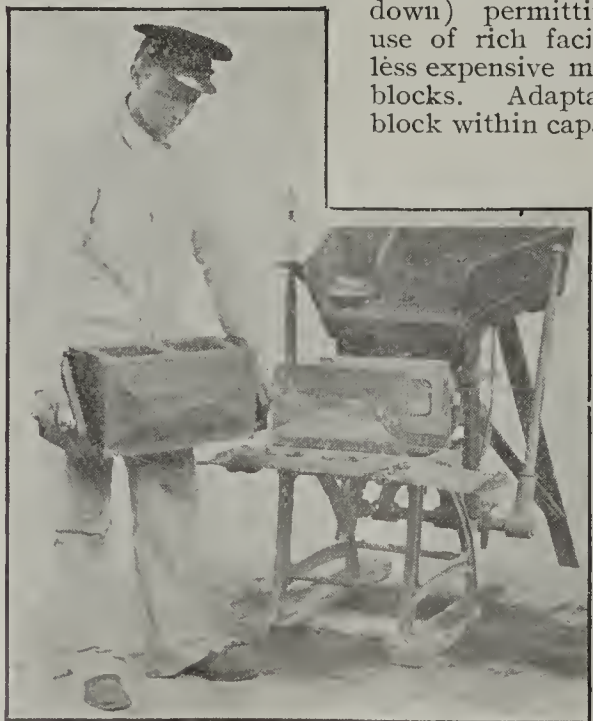
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Ideal Concrete Machinery Co.
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South Bend, Ind.
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Agents for Canada

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DRYERS

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GLASS SAND
ROCK, CLAY
COAL, ETC.**

All Mineral, Animal and Vegetable Matter.

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue W. C.

American Process Co.,
62-64 William St. NEW YORK CITY

B. F. Atherton has purchased of H. D. Brown his brick yard at Waterbury, Vt.

The Waynesboro (Pa.) Brick & Stone Co. is preparing to manufacture paving brick.

The Stevenson Brick Co., McVeytown, Pa., has been incorporated with \$10,000 capital stock.

The four tile factories at Spencer, Iowa, which have been practically idle during the winter, opened up the fore part of the month.

The Business Mens' Association of Francisville, Ind., appointed a committee to raise \$25,000 to locate a terra cotta plant at that place.

Work on the Burke Brick Co.'s plant at Ft. Smith, Ark., is progressing rapidly. It is expected that the plant will be ready to begin making brick in thirty days.

The Black Hand Tile & Brick Co. has been organized with \$15,000 capital stock for the purpose of building a plant at Black Hand, Toboso P. O., Licking Co., Ohio.

The C. W. Raymond Co., Dayton, Ohio, has been incorporated with \$200,000 capital stock, by Charles W. Raymond and others to manufacture clay-working machinery.

The Tama Iowa News is calling upon the citizens of that town to establish a brick and tile works there, claiming that a clay of excellent, fine shipping facilities and a good demand for brick.

The Potlatch (Idaho) Brick Co. has purchased the plant of the Palouse (Wash.) Brick & Tile Co. a mile south of the city, and the plant will be moved to Potlatch for the season and later moved back to Palouse, Wash.

The Minter City Tile Co., Minter City, Miss., has been incorporated with \$48,000 capital stock, by S. D. Jones, D. T. Mitchell and others.

S. N. Lowell, proprietor of the Rock Hill (S. C.) Bottling Works, is preparing to start a brick works of 30,000 daily capacity, near the Ashe Brick Works.

Whittemore, Iowa, business men are agitating the putting in of a tile plant at that place. There seems to be enough capital in sight to push the proposition.

The Atlanta Terra Cotta Co., of New York City, N. Y., has certified with the secretary of state that its capital stock has been increased from \$1,000,000 to \$3,000,000.

The Lethbridge (Alta.) Brick & Terra Cotta Co. was recently held and the capital stock increased from \$25,000 to \$75,000. \$25,000 is being spent now on improvements.

The Meadow Brook Construction Co., Scranton, Pa., will resume operations at the old Connell plant after an idleness of several months. Michael Connolly is in charge.

The West Coast Brick & Tile Co., Centralia, Wash., has been organized with \$15,000 capital stock. Incorporators are A. Hartz, S. R. Wagoner, W. Kuehn, and C. S. Gilchrist.

George N. Dyer, who for the past thirty-three years has conducted a brick yard at Gardner, Mass., has decided to give up the manufacture of brick and expects to manufacture cement blocks.

The Richfield (Utah) Brick & Tile Co. has been incorporated with \$4,000 capital stock. J. W. Stewart is president, J. A. Jepsen, vice president, and A. E. Youngberg, secretary and treasurer.

The Ideal Brick Kiln

SHOULD BE

Cheap and durable and have a big daily capacity.

In order to save fuel it should be of the continuous type.

To produce clean colored bricks without cracks, the preliminary drying should be performed in chambers separated from the burning compartment proper, according to the principle of the common up-draft kiln.

The heat from the already burned cooling bricks should preferably be used to lighten the burning proper.

The different stages of the burning process should always be easily observable. Such one is the

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FOR SALE

One 40 h.p. gasoline engine, one semi-automatic side cut brick cutter, Wallace Mfg. Co. make. One disintegrator and dump table made by Horton Mfg. Co.; 75 good brick moulds, also trucks and wheelbarrows. All in good condition. Address
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Where a country is tiled, factories are offered complete, or in part, Cheap. Have several Brewer Mills for sale, and others.
Engines, Boilers, Crushers, Drying Pipes, etc. If you wish to buy or sell write
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A GOOD LOCATION FOR PLANT

New Athens offers an exceptionally good location for a large Dry Press brick yard. Only 28 miles from East St. Louis, where the entire product can be marketed. For particulars address,
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CLAY CENTER BRICK CO.
Clay Center, Kansas

FOR SALE

Modern Soft Mud Plant, city 12,000, good business, good prices, abundance of clay and sand. Address,
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One Semisteel Company's Sampson Sand-lime Brick Press in good condition, used but a short time. Address W. P. BRUBAKER,
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One Chambers pug mill, practically new, sufficiently large for any output. A first class machine in every respect. Address
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The following machinery not used by us but all in good condition, will be sold at very reasonable prices.
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One Freese Combination Brick Machine, capacity 20,000 to 30,000 per day. Hand cutting table and winding drum. Excellent condition and only run four months. Good reason for selling.
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For Sale—75 Acres; 60 feet of Shale.
10 feet of Fire Clay, 3 feet of Coal developed.
Excellent conditions. Railroad track.
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NEW CENTRAL COAL CO.
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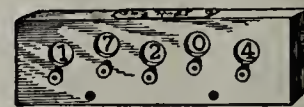
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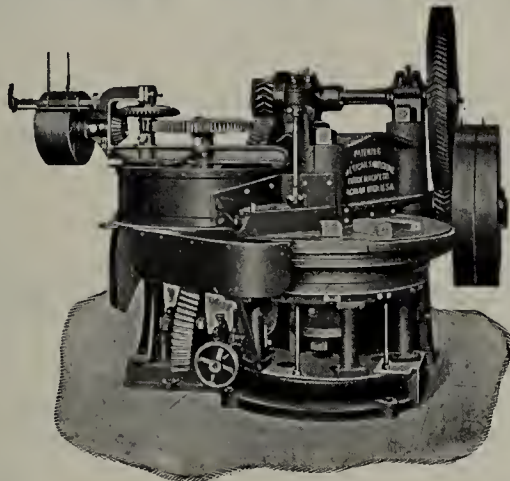
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60-70% 70-80% 80-90% OXIDE
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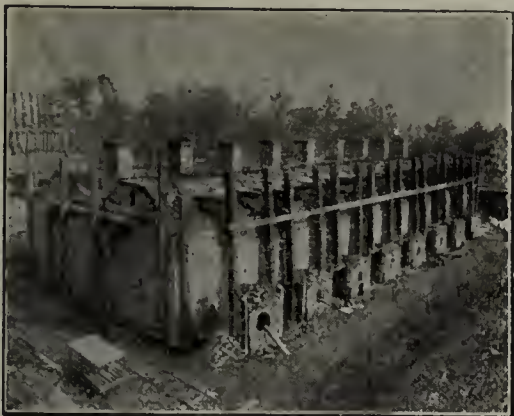
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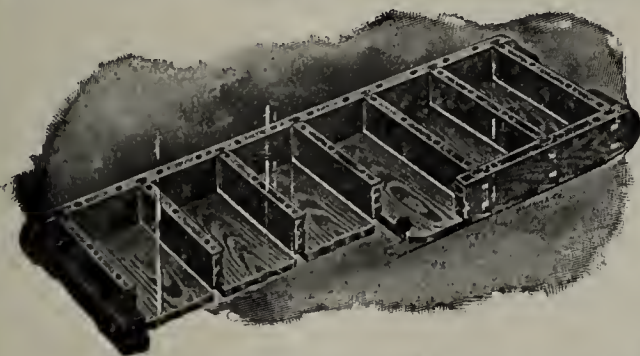
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PERFECTION BRICK MOULDS



These are the kind of Brick Moulds the Brick Makers have always wanted but could not get till now. You can get a mould that the vents are right all the time. No charge whether the Mould is wet or dry. Try a sample order. Satisfaction guaranteed.

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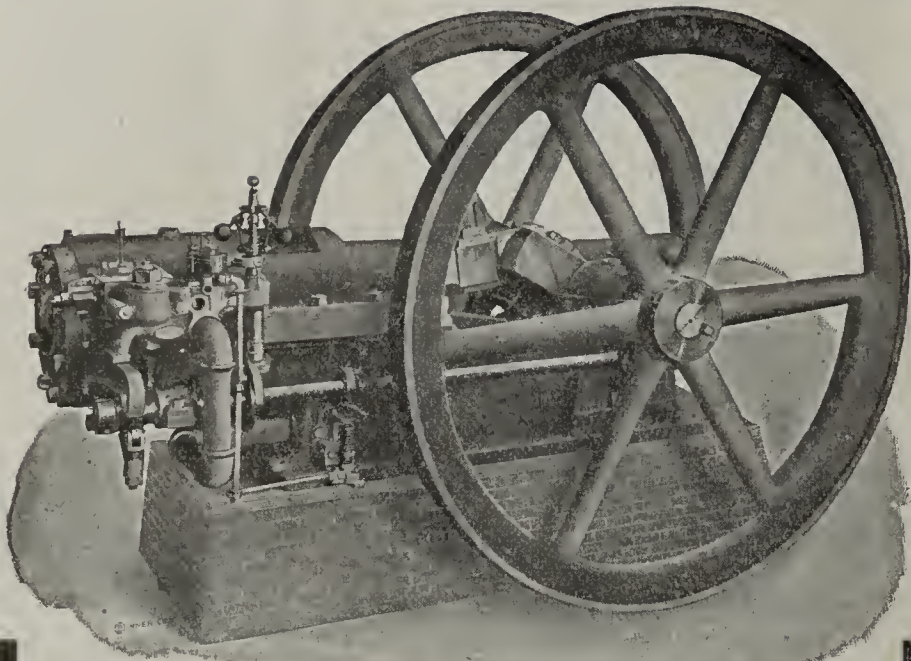
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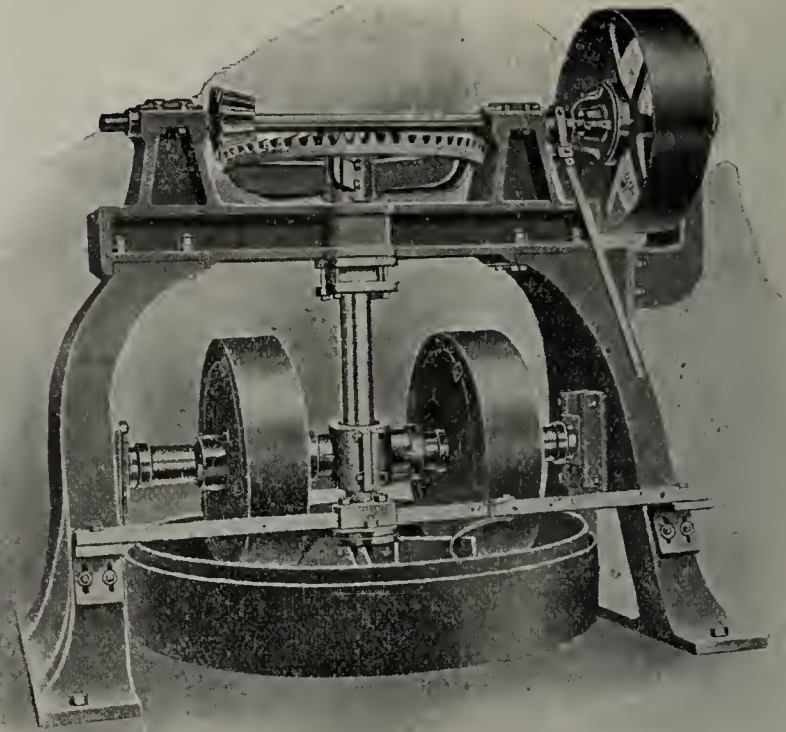


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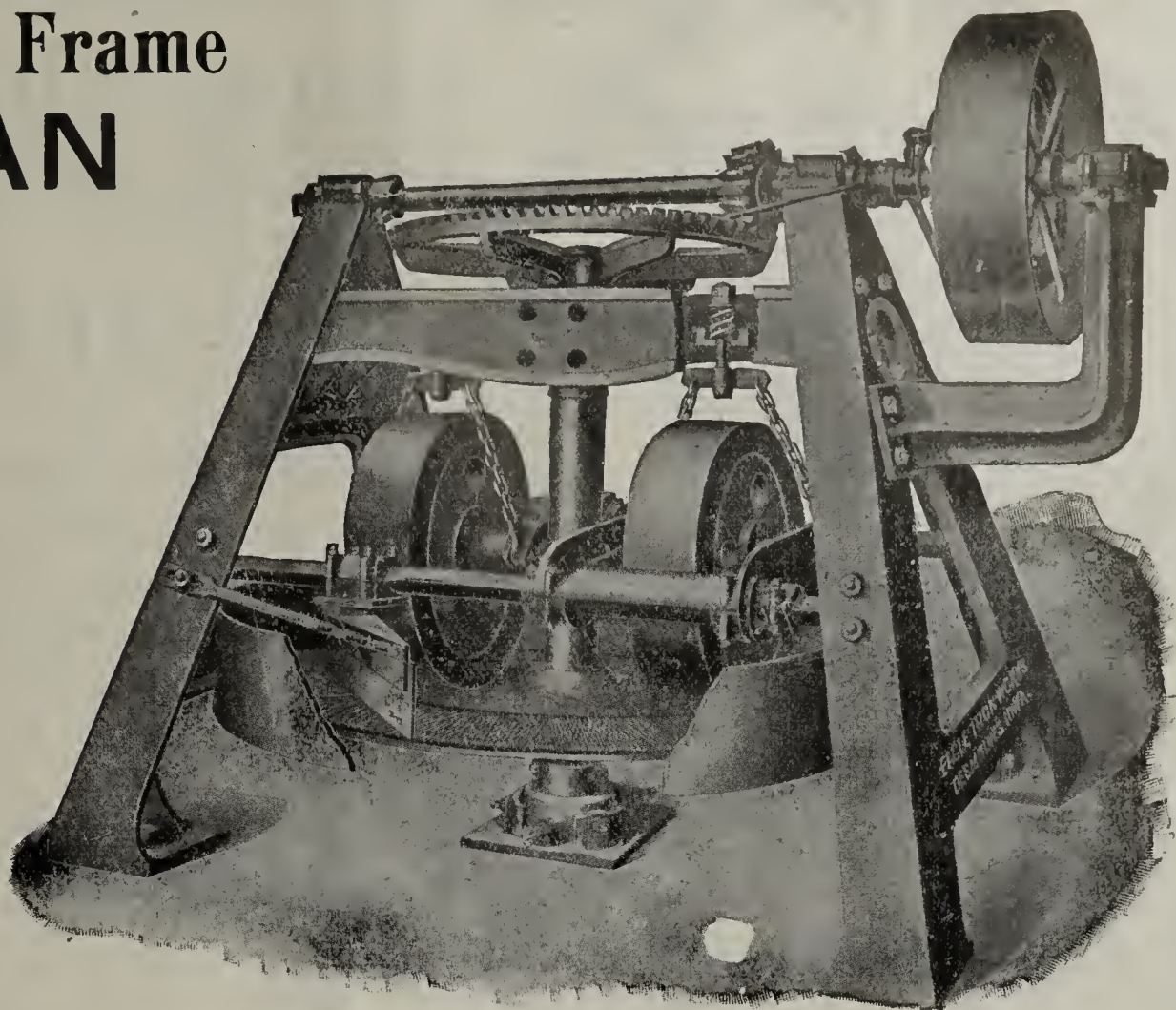
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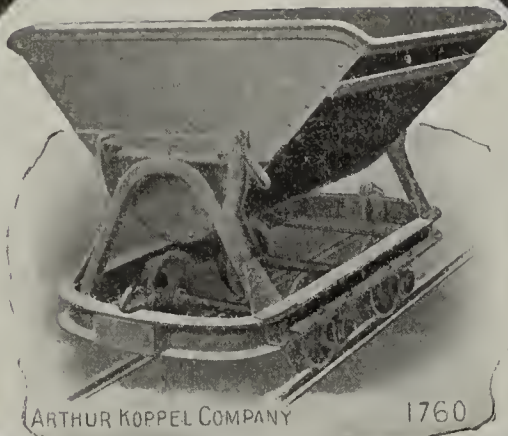
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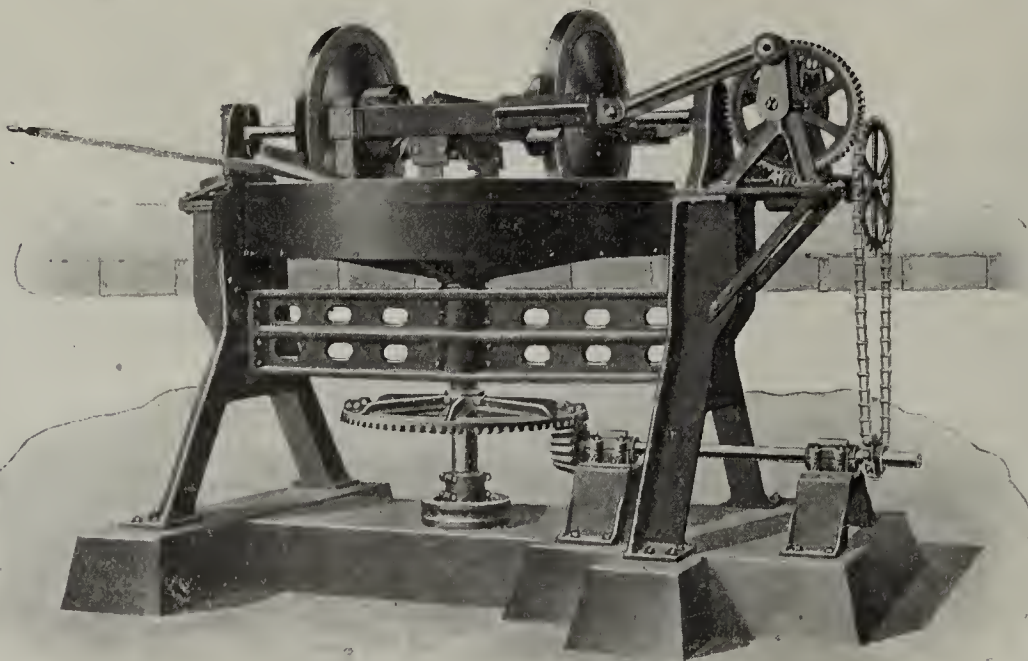
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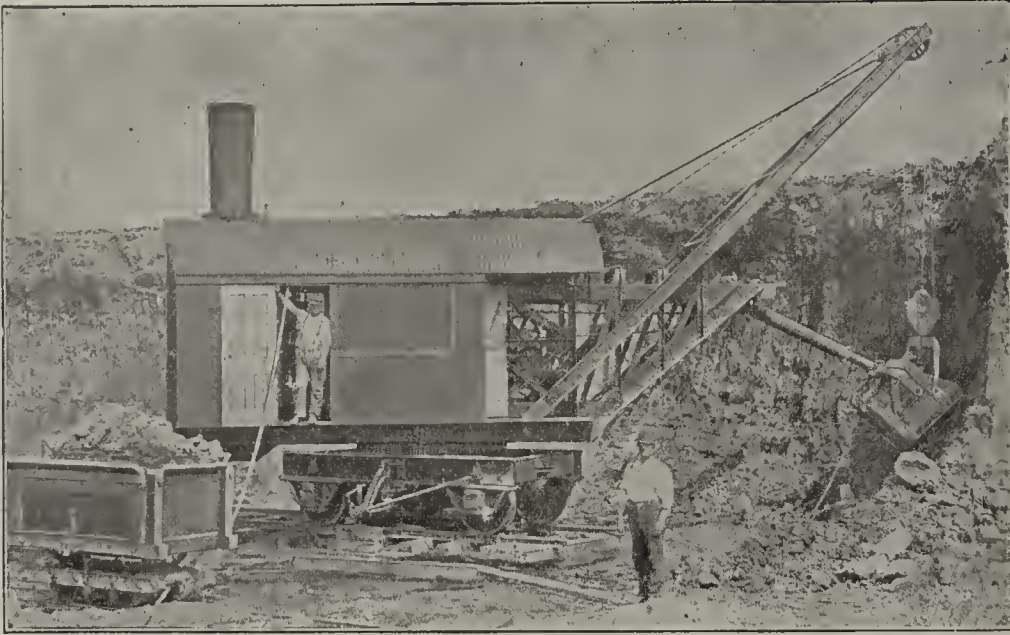
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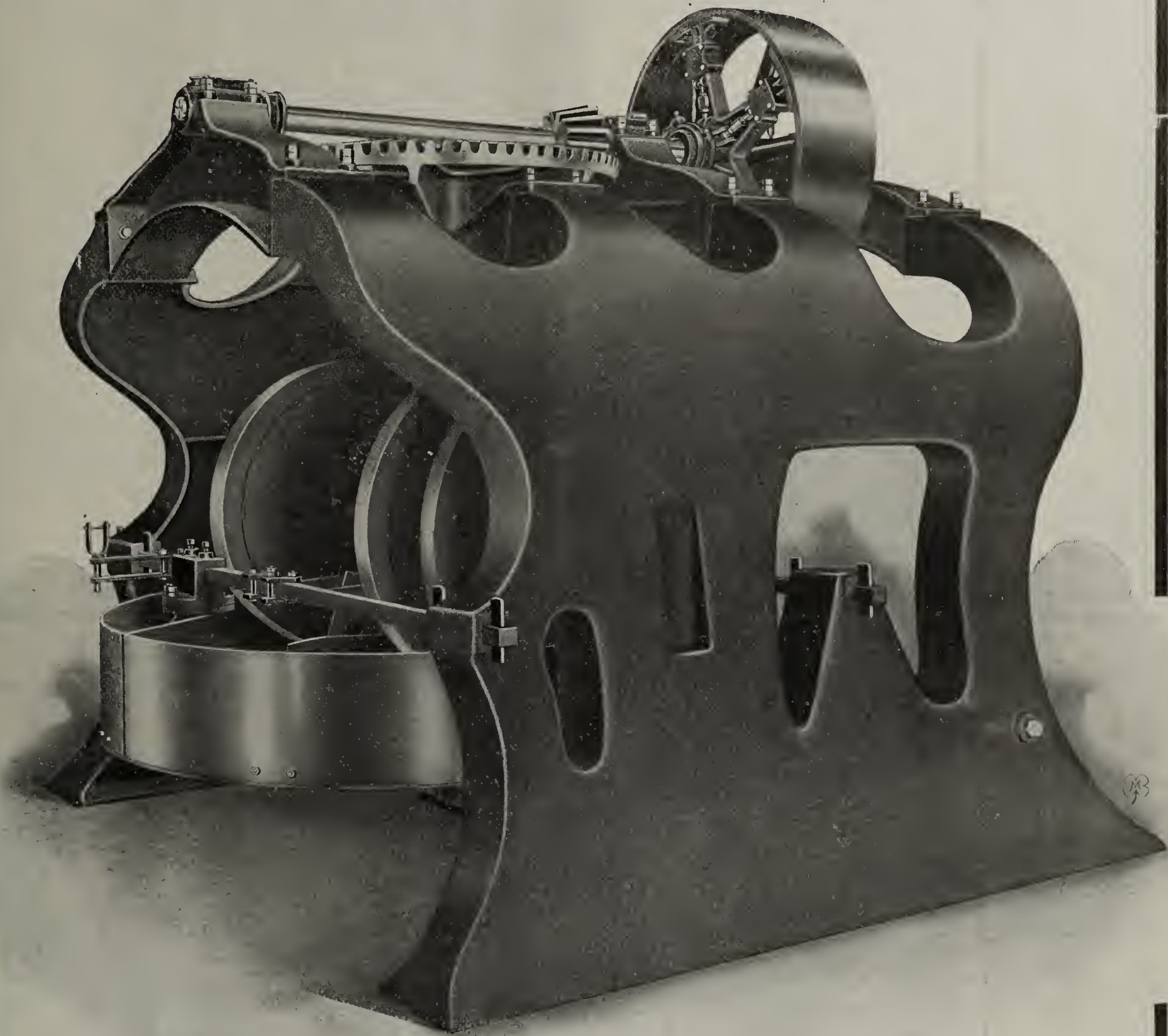
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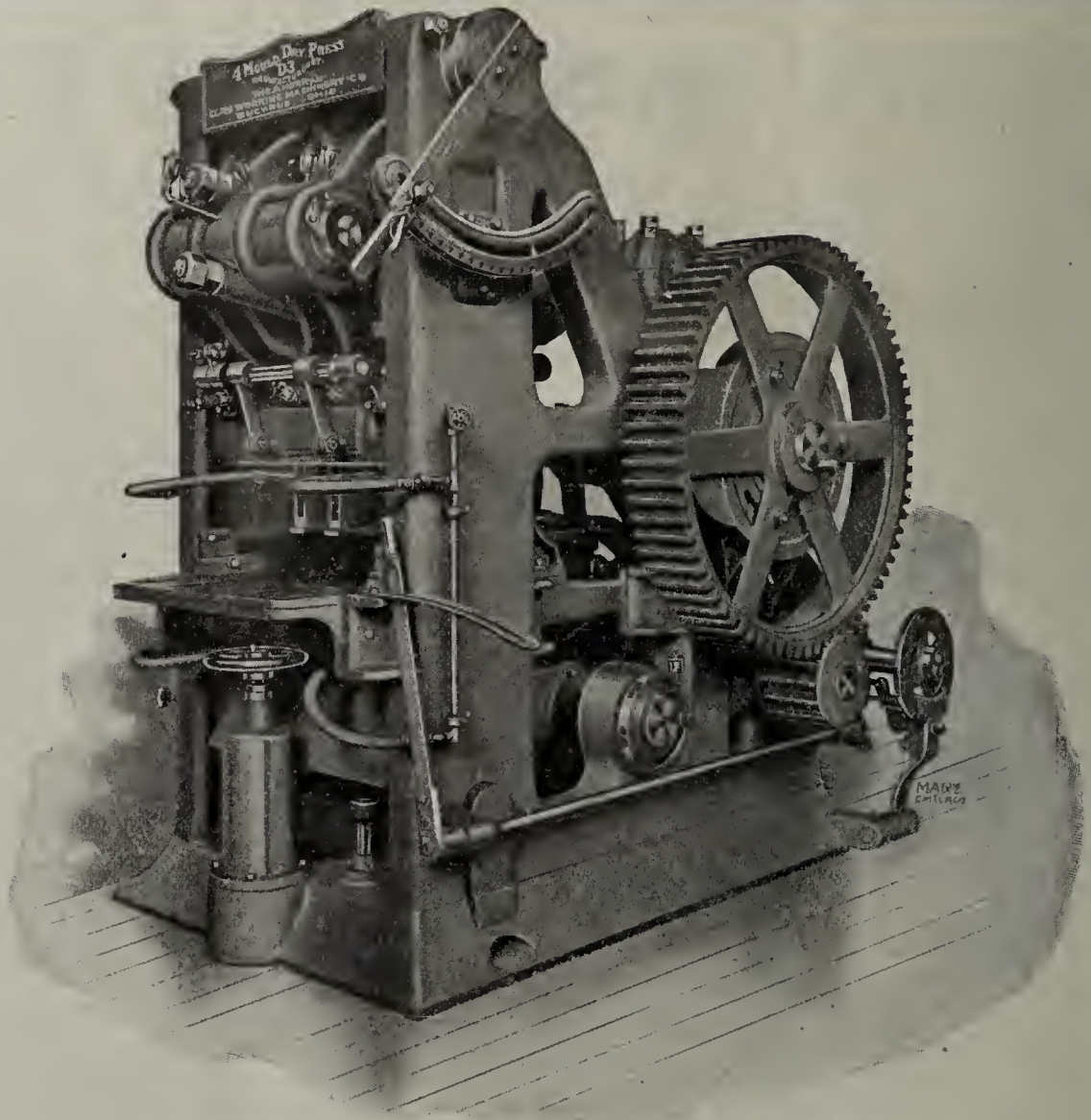
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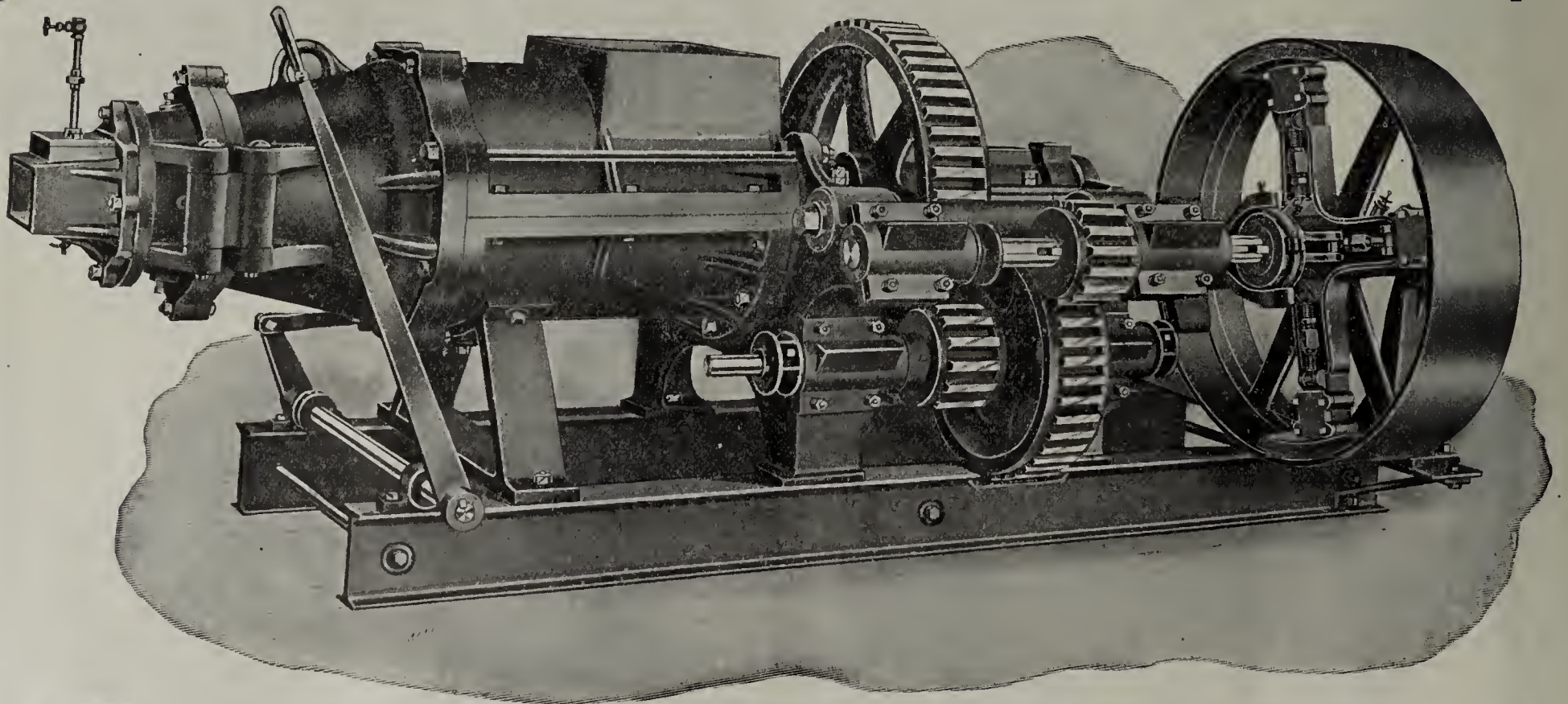


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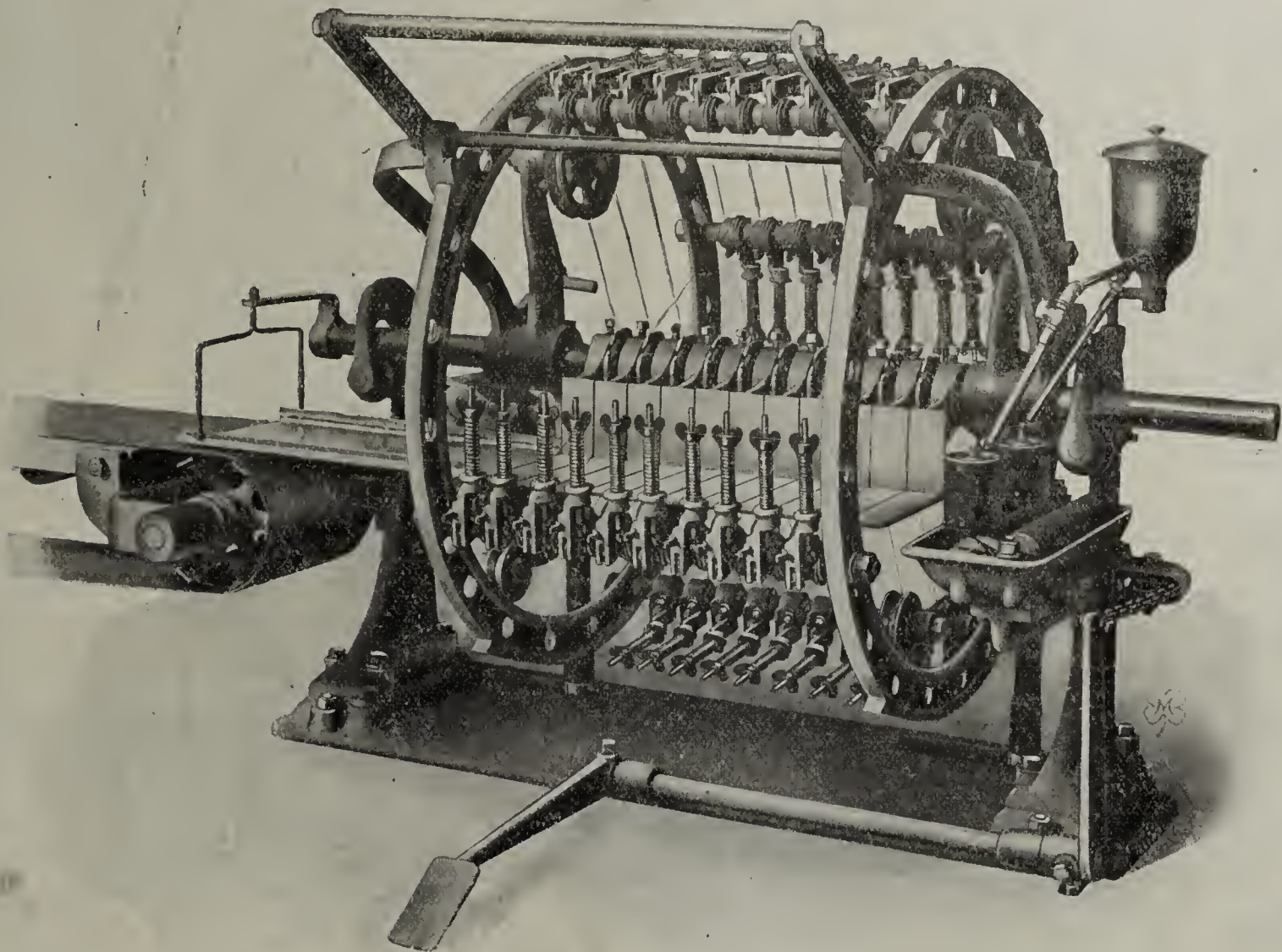


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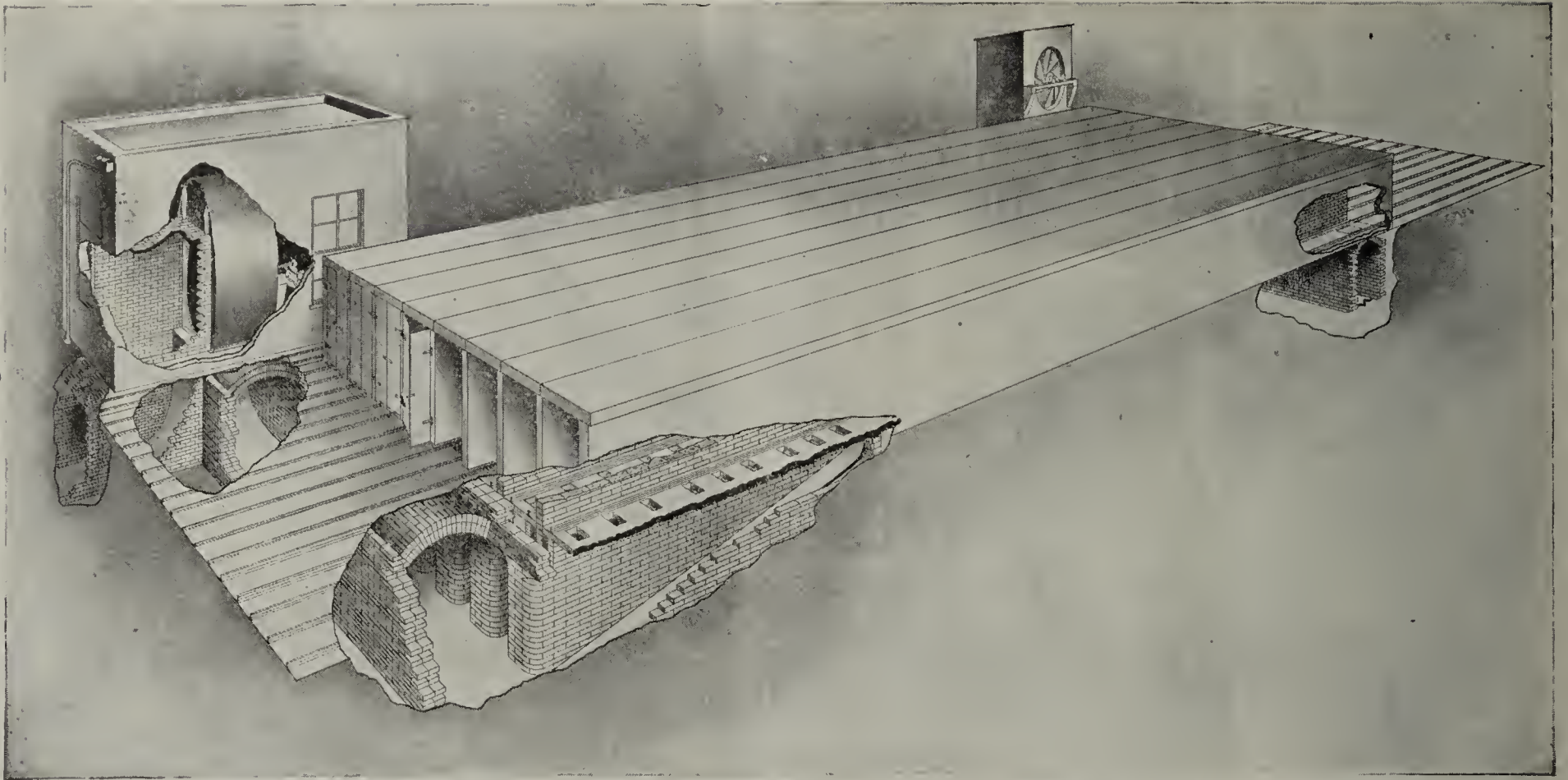
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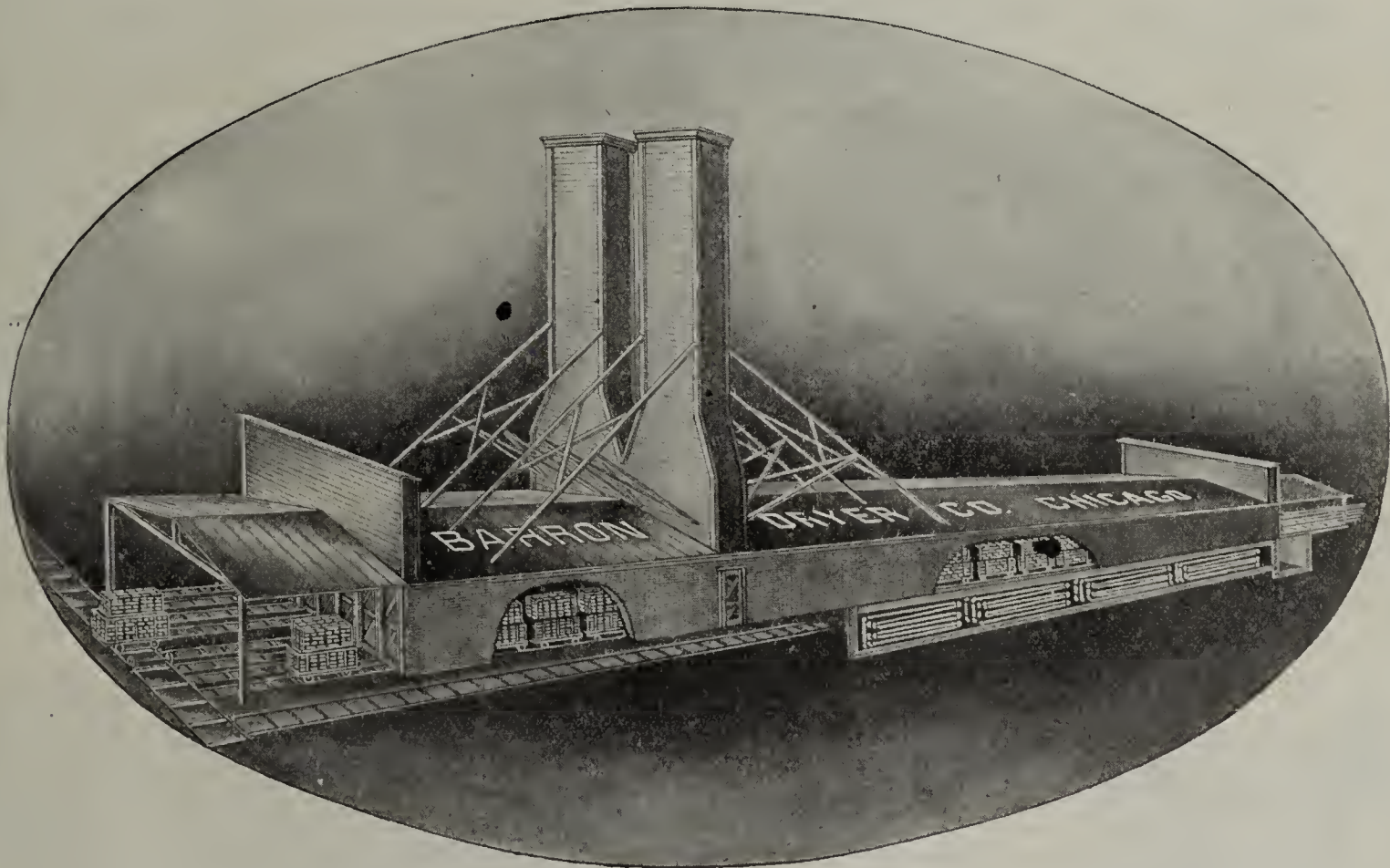
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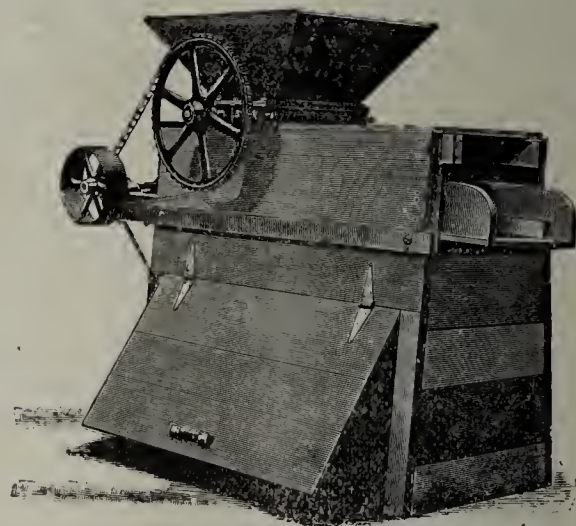
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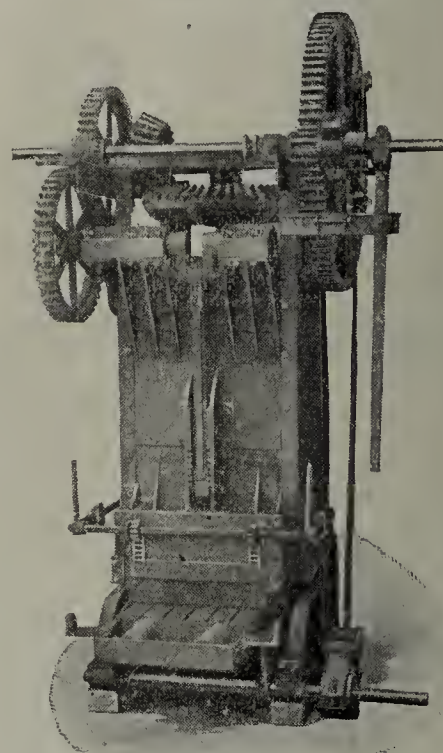
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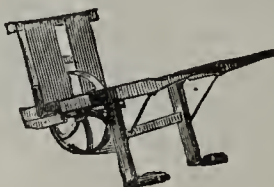
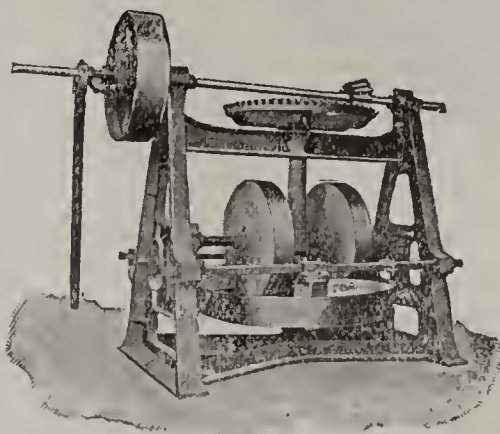
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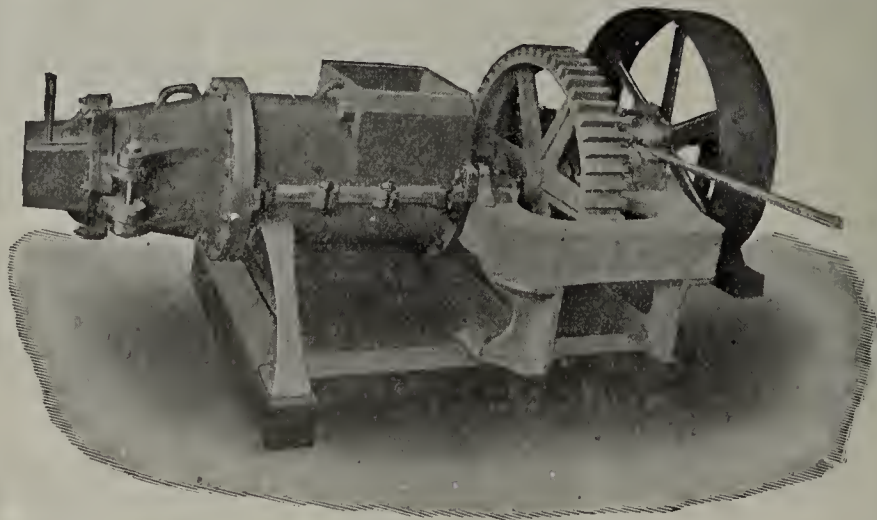
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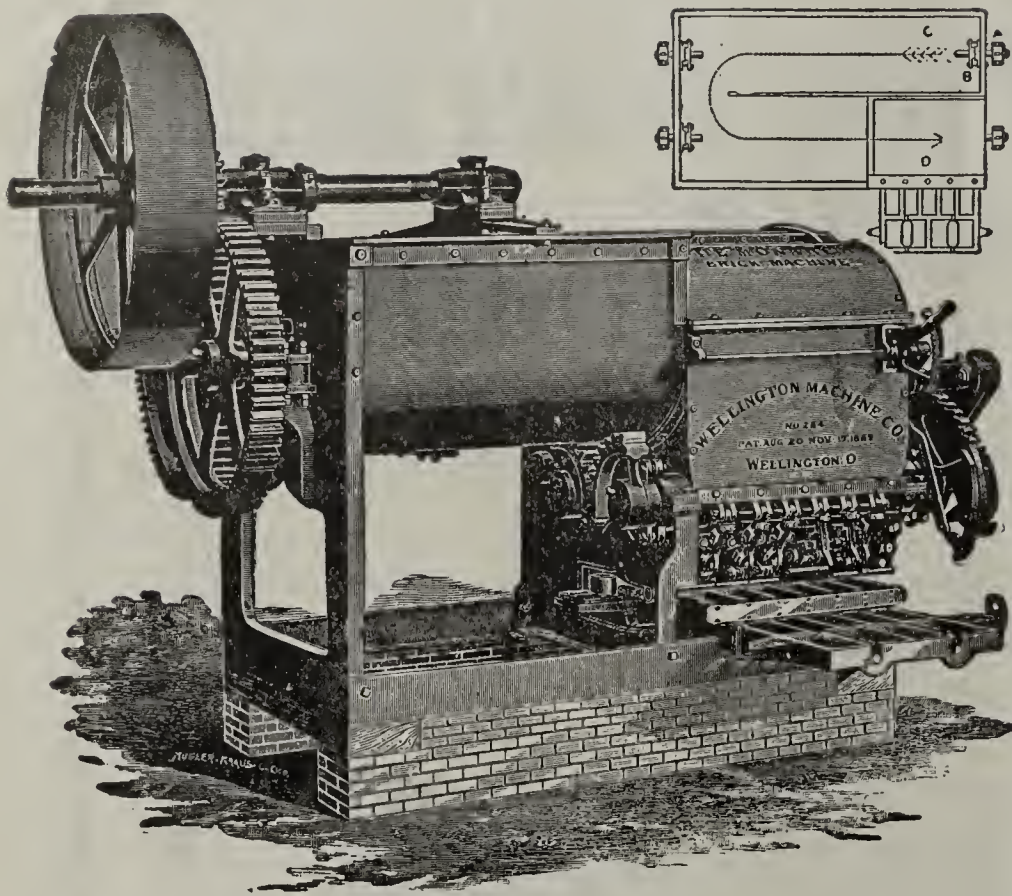
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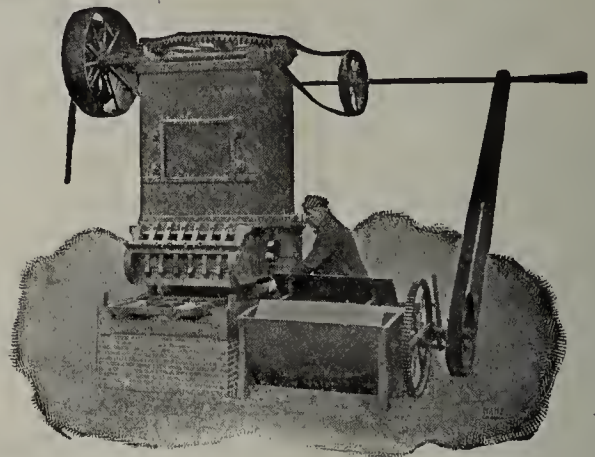
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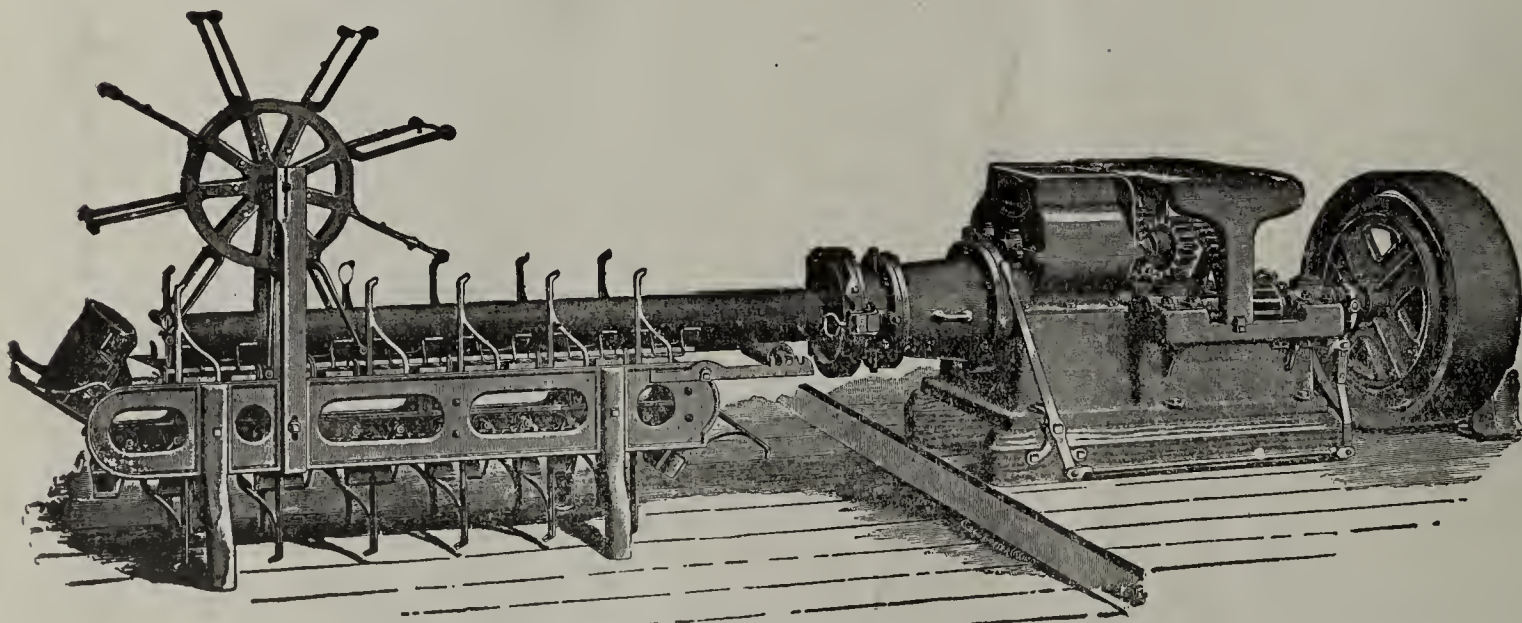
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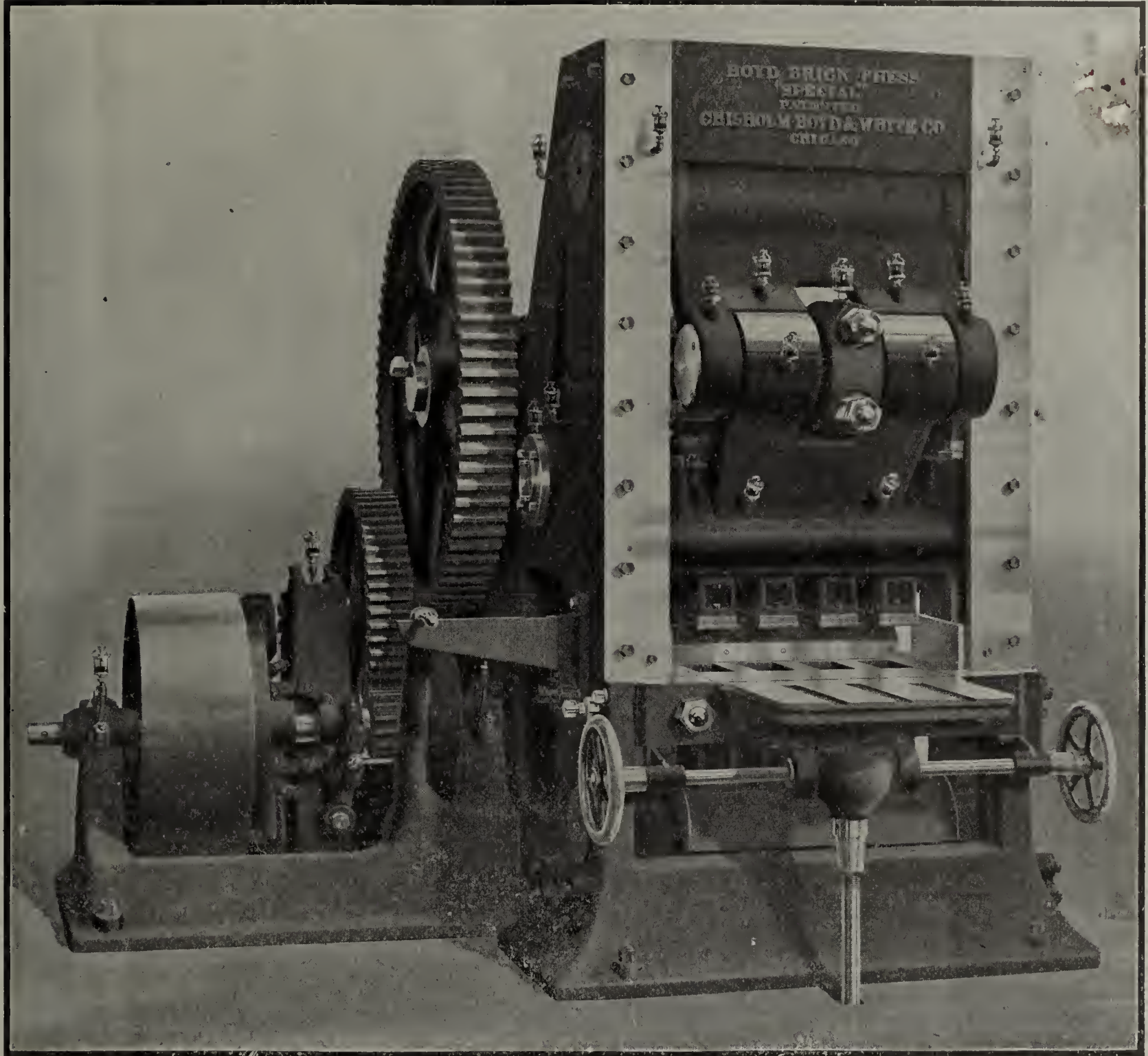
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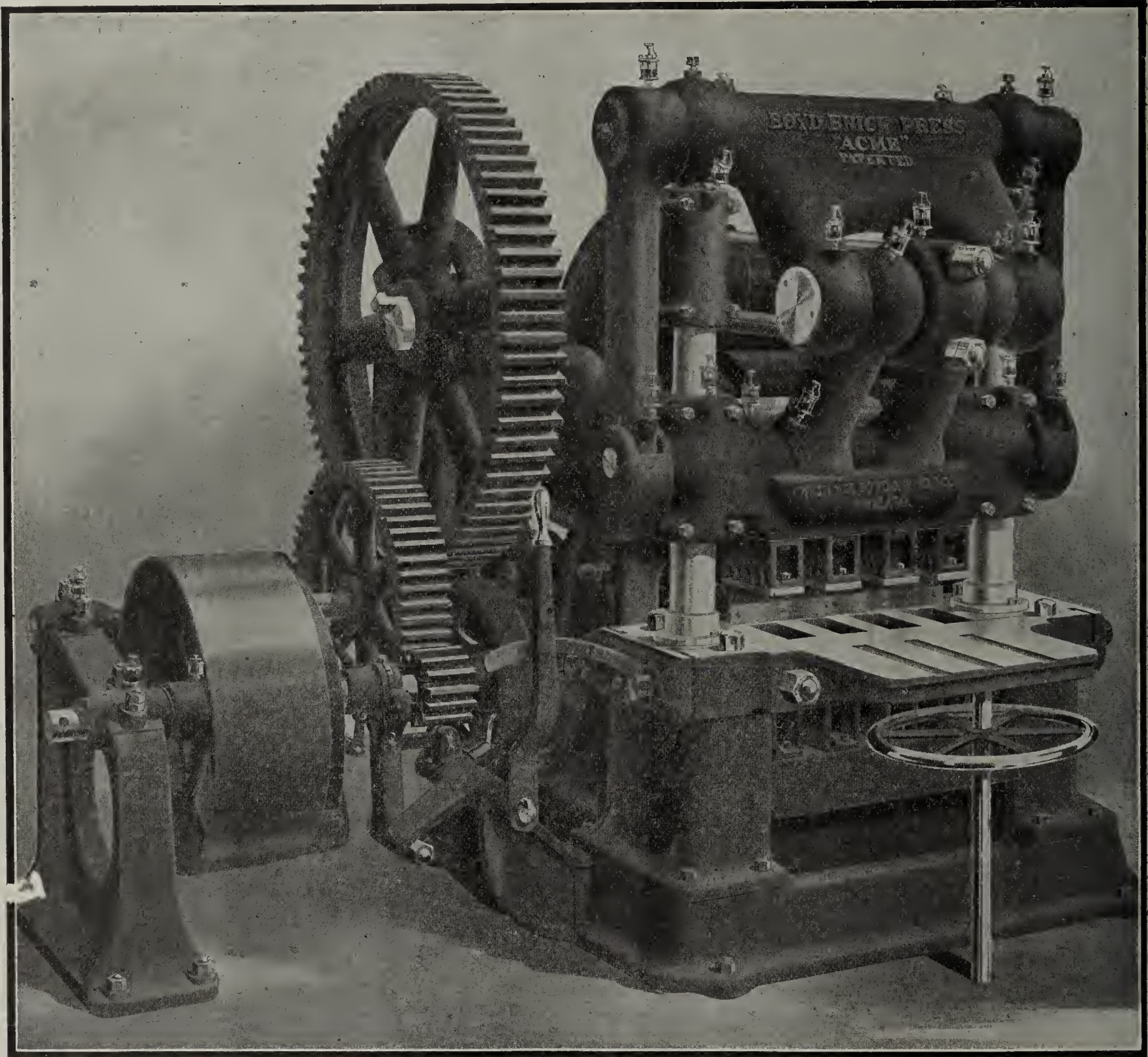
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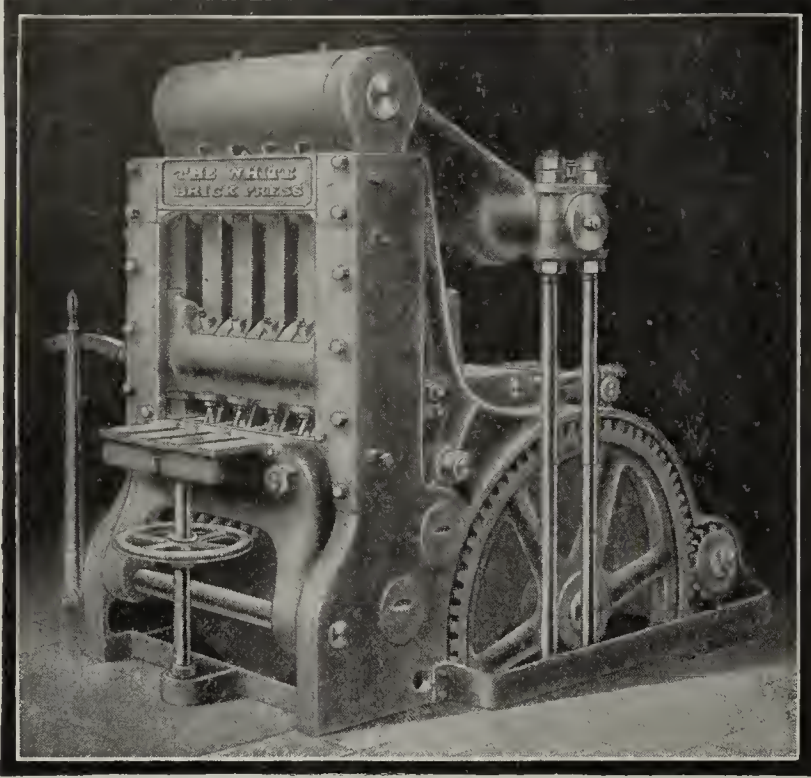
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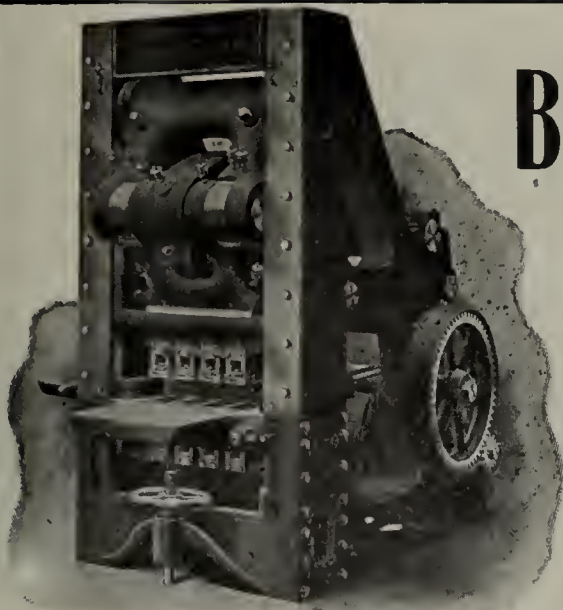
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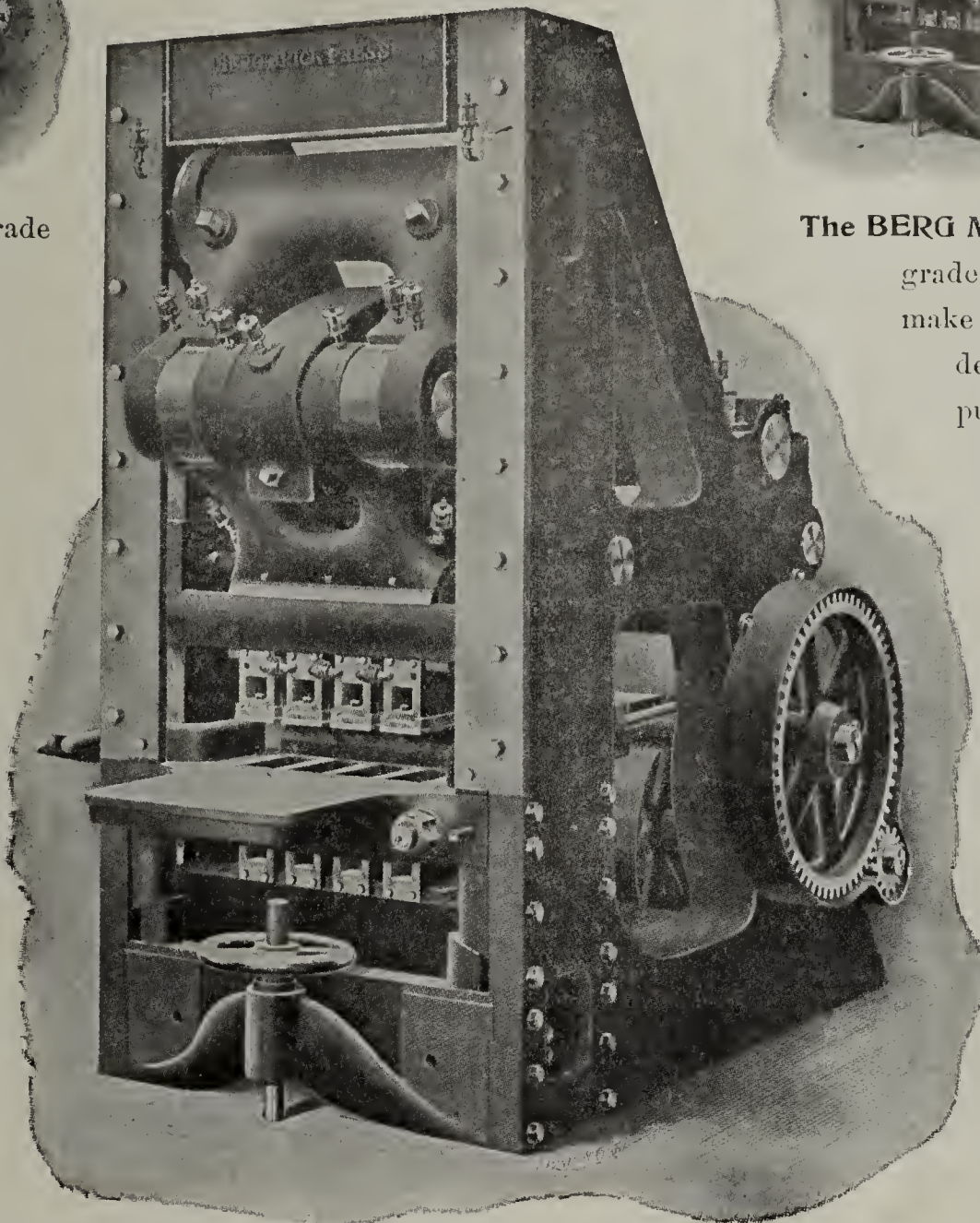
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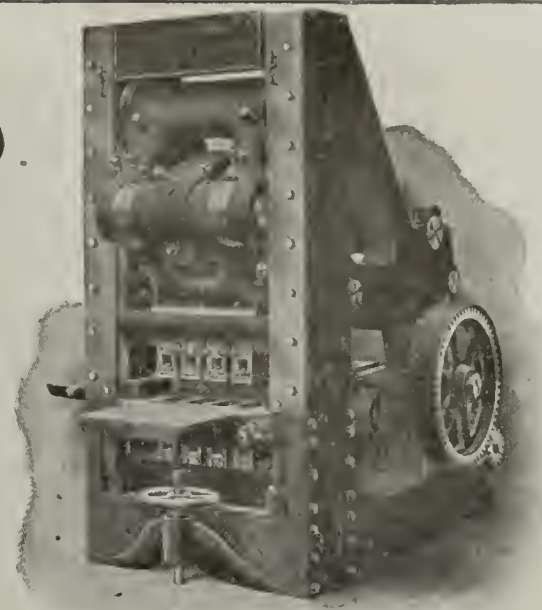
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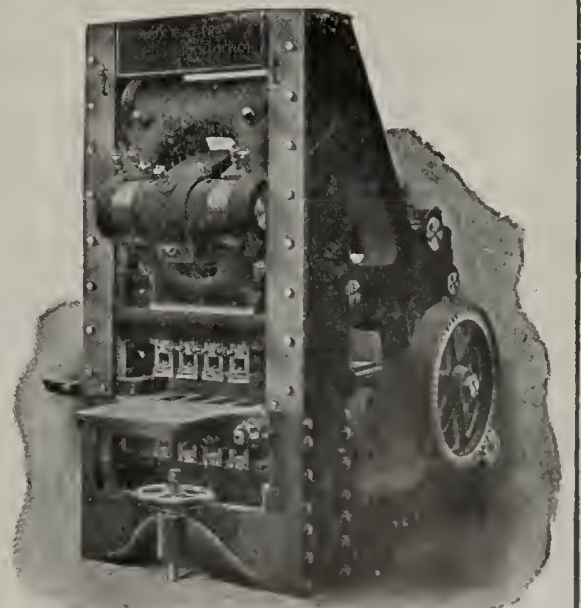
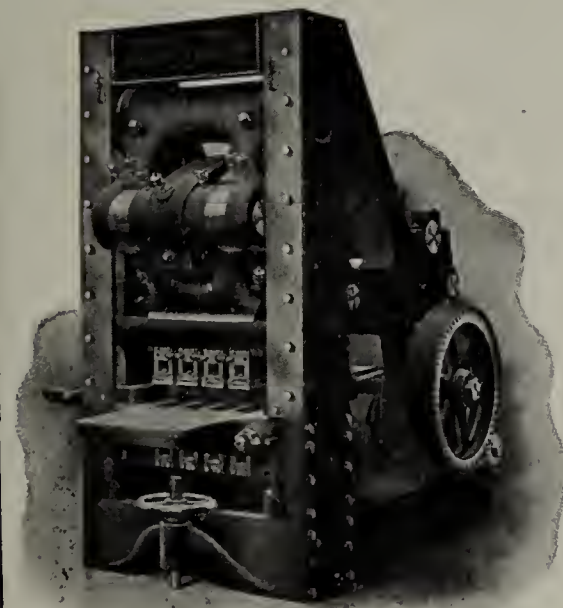
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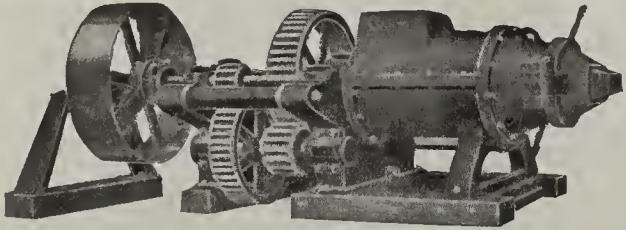


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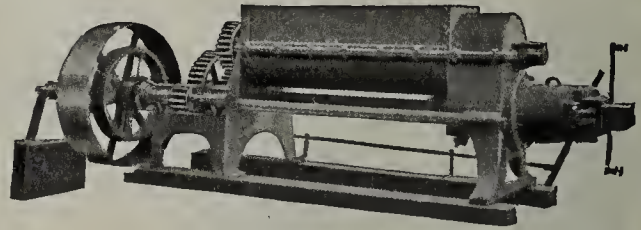
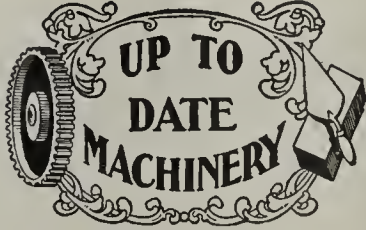
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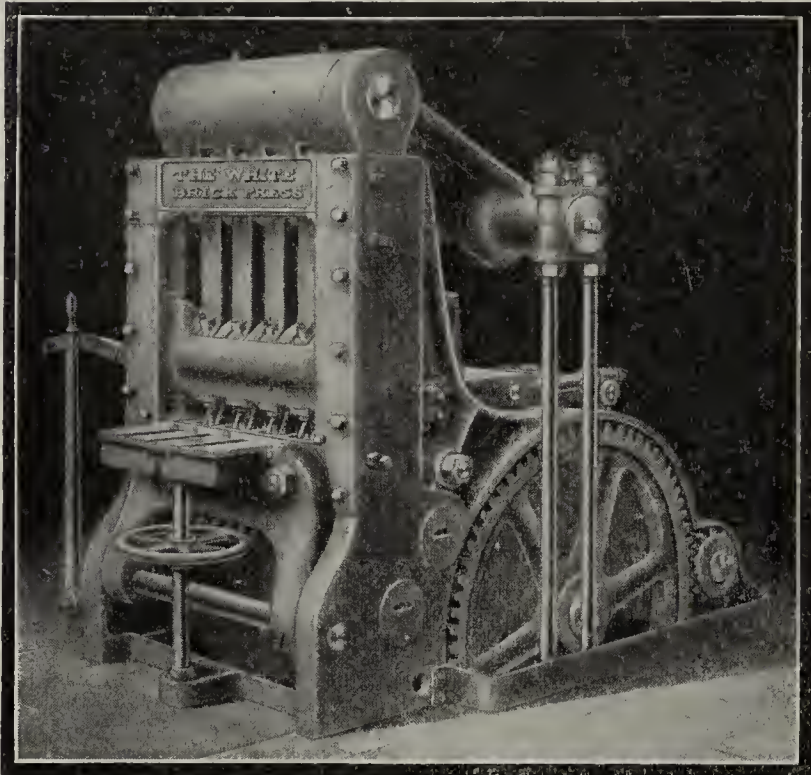
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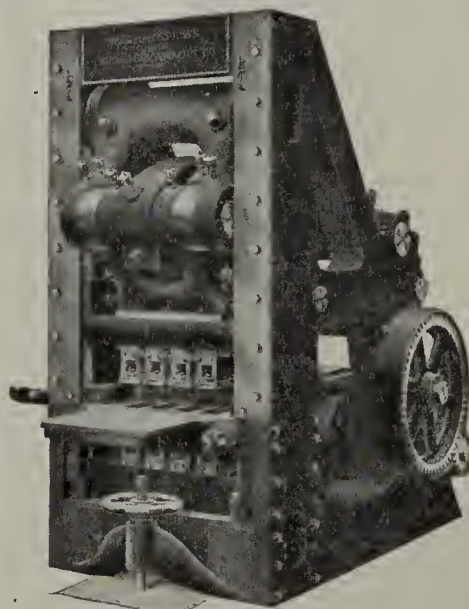
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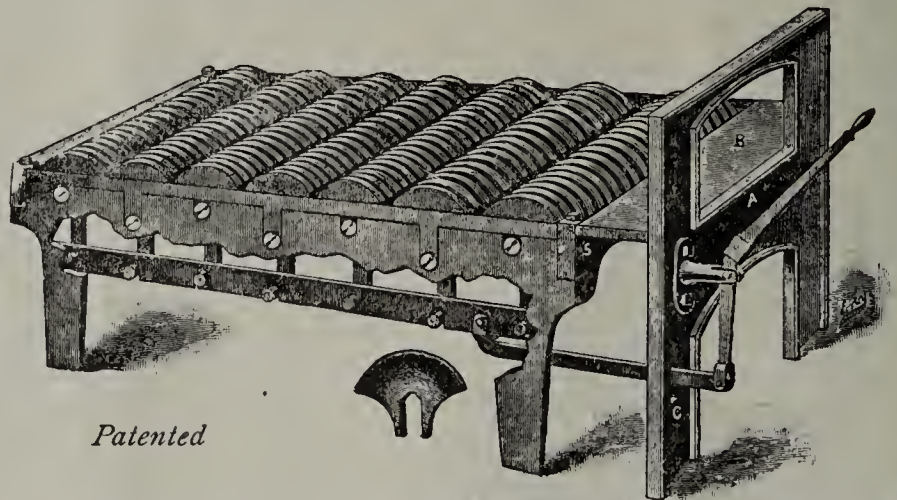
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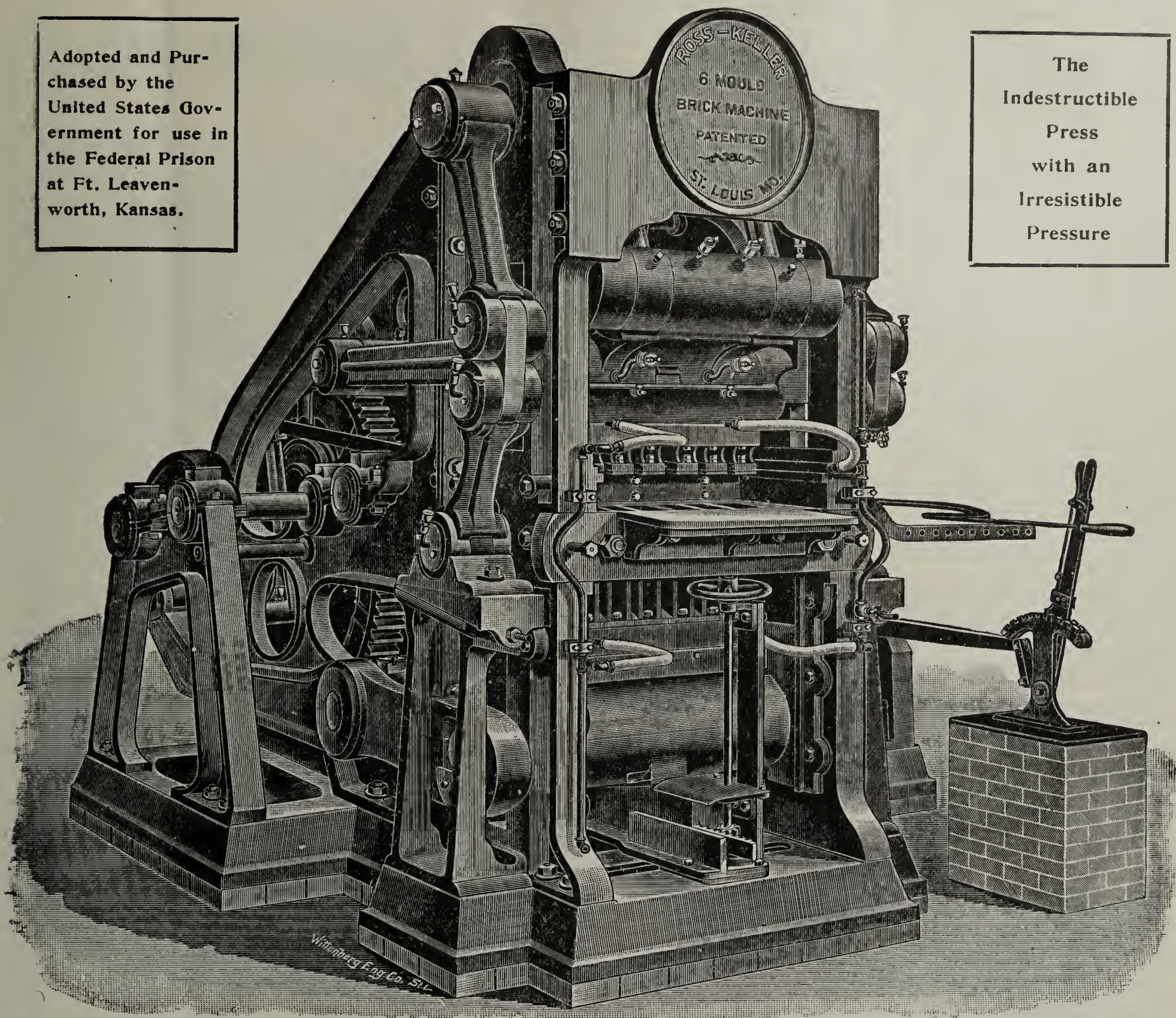
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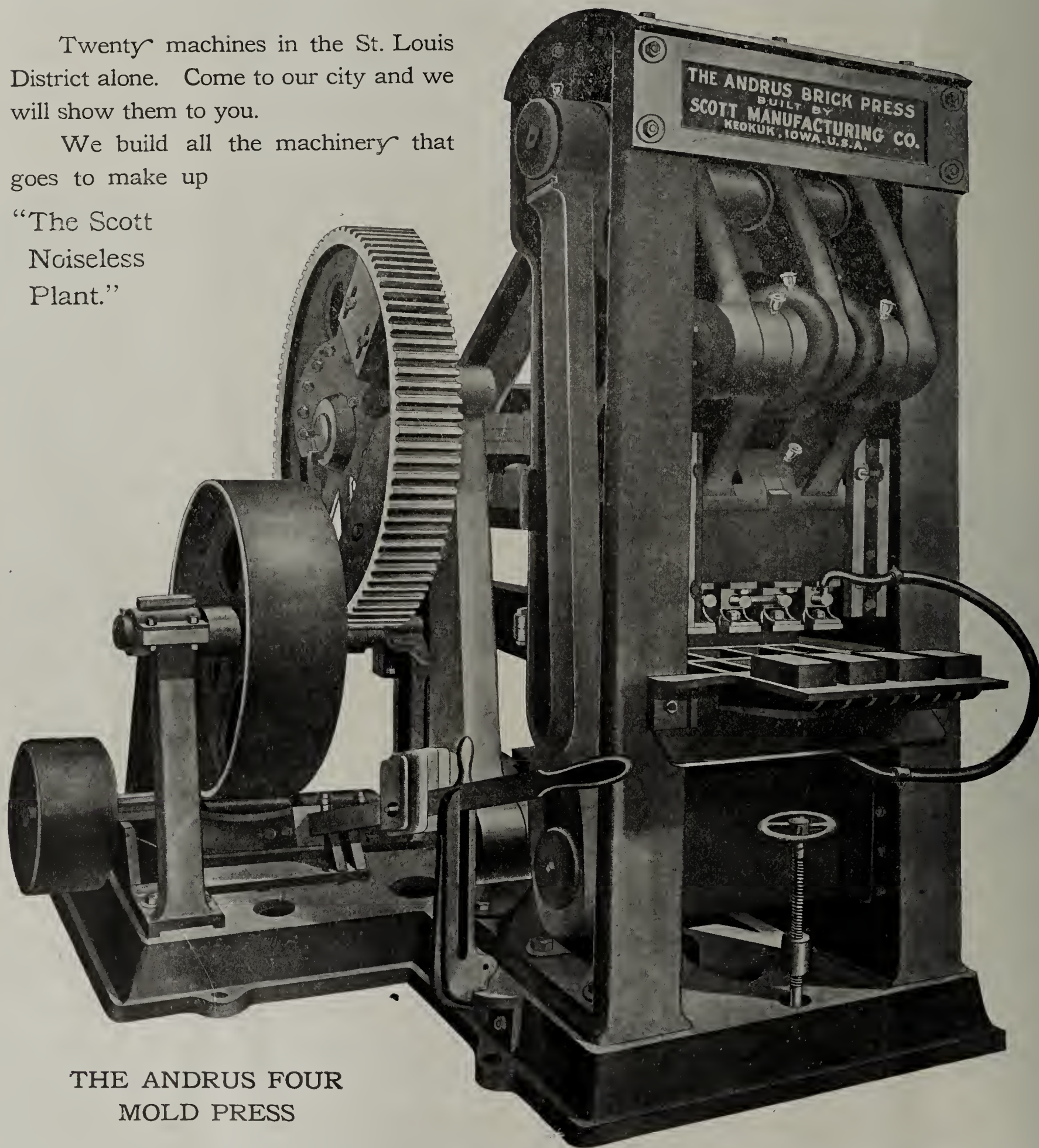
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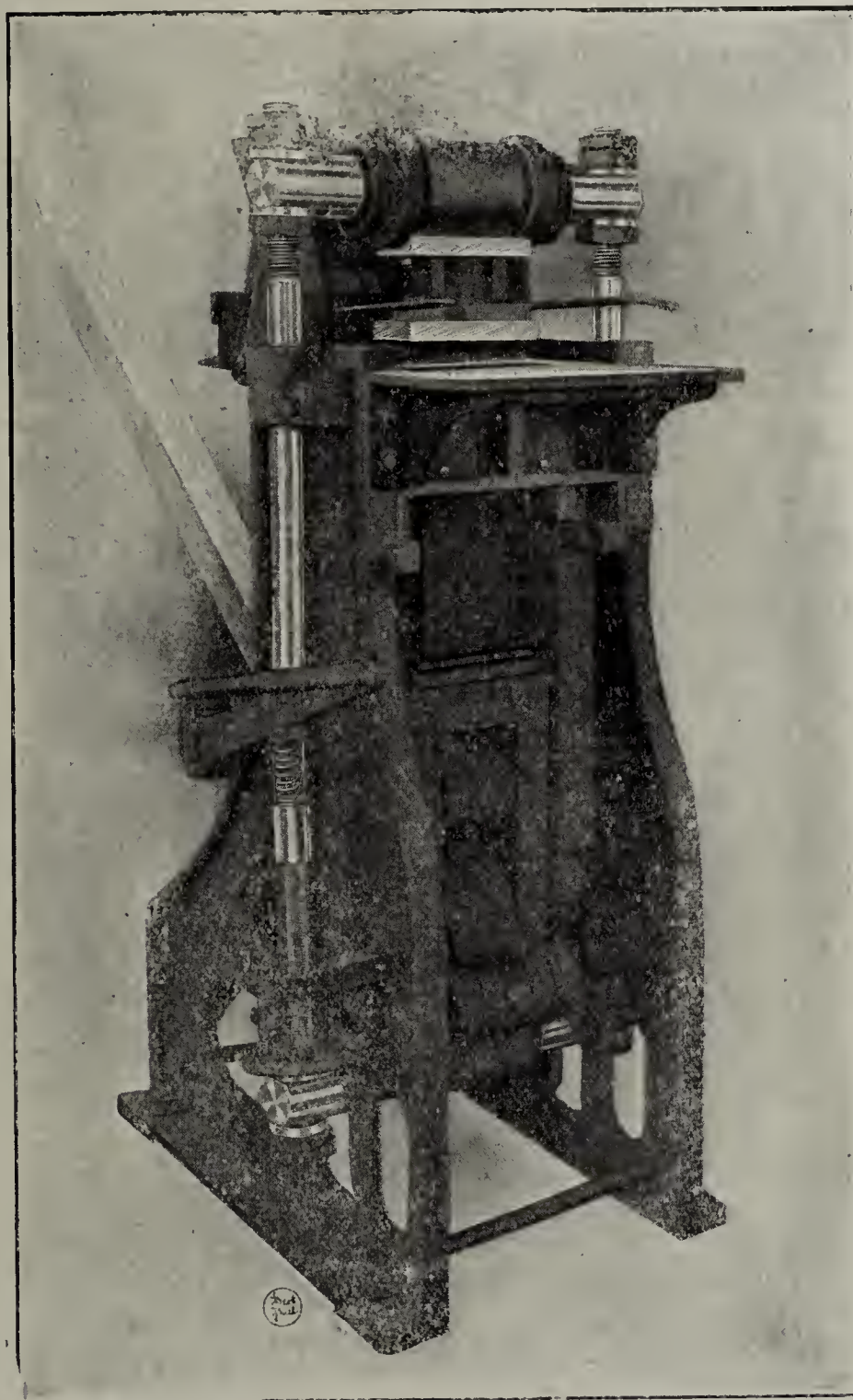
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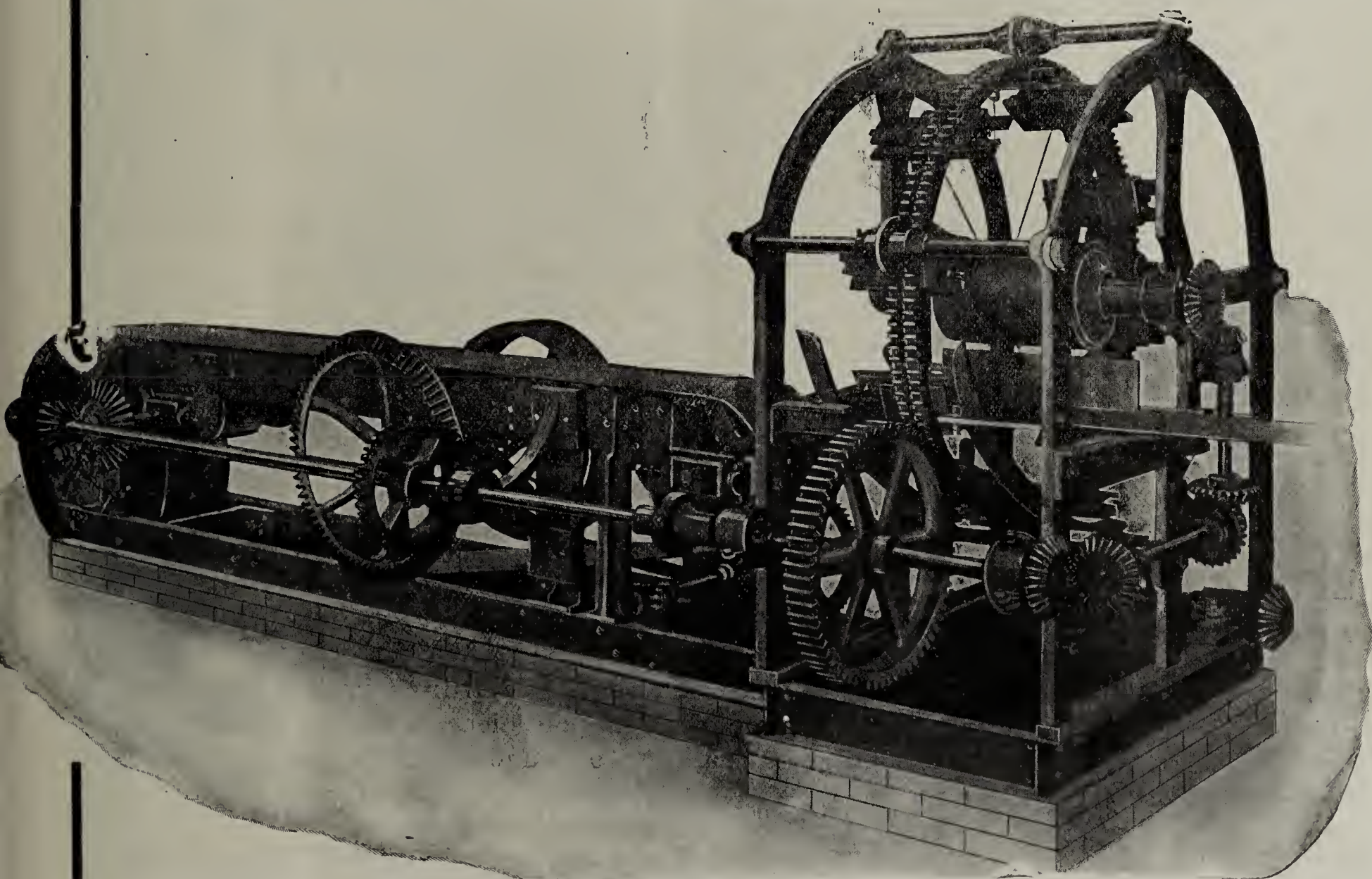
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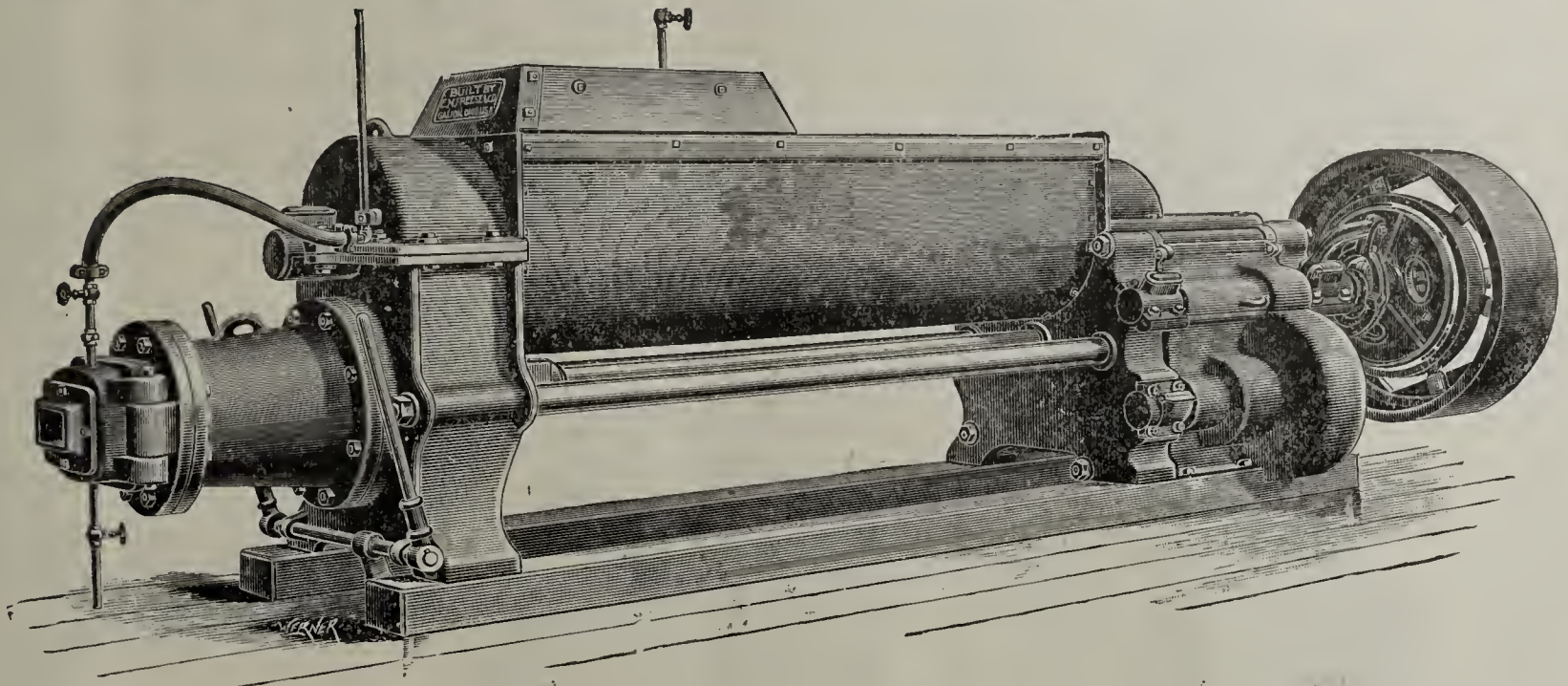
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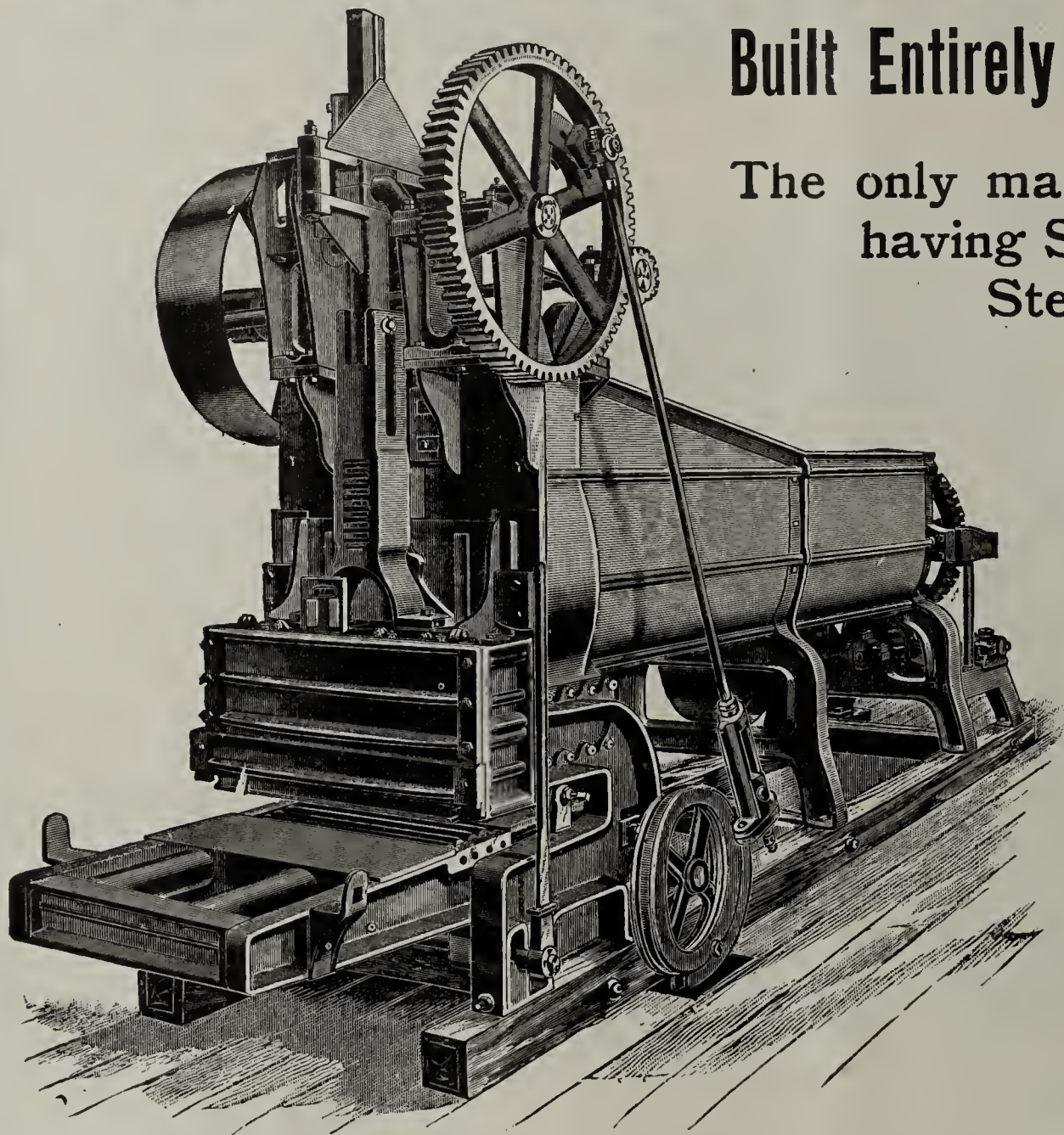
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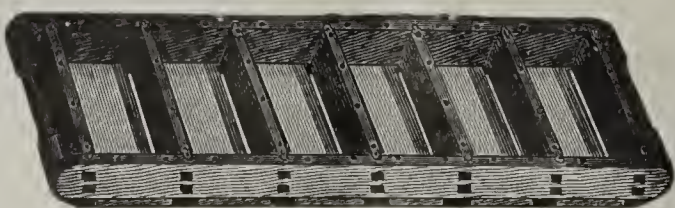


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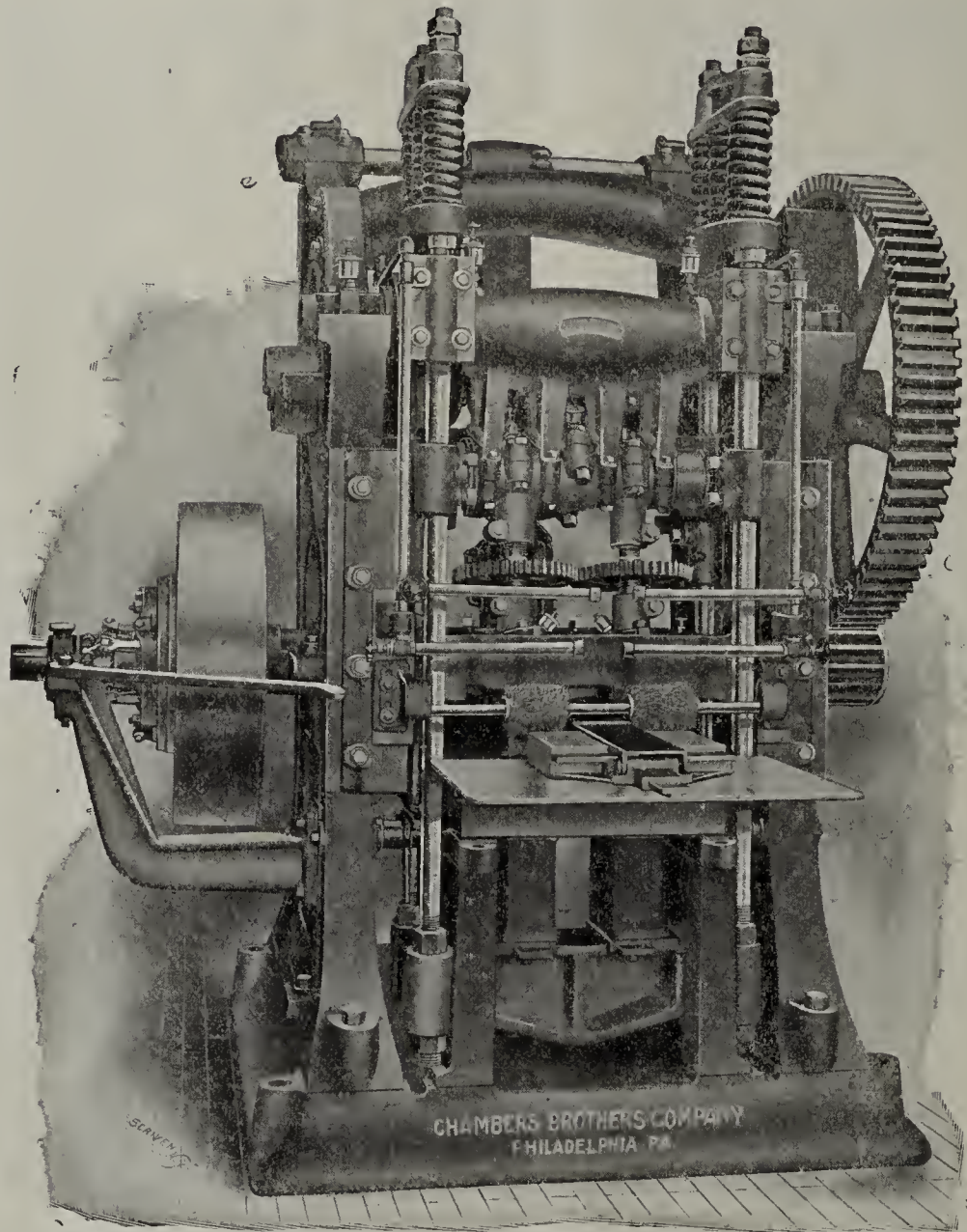
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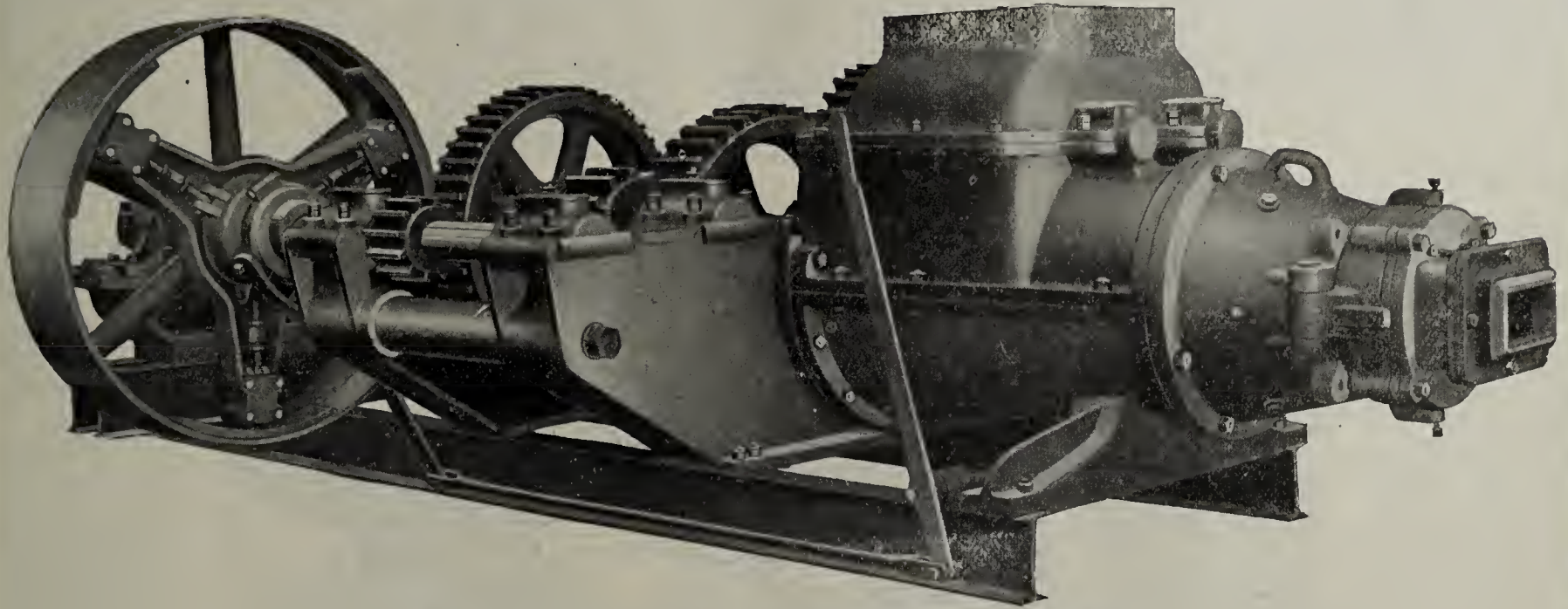
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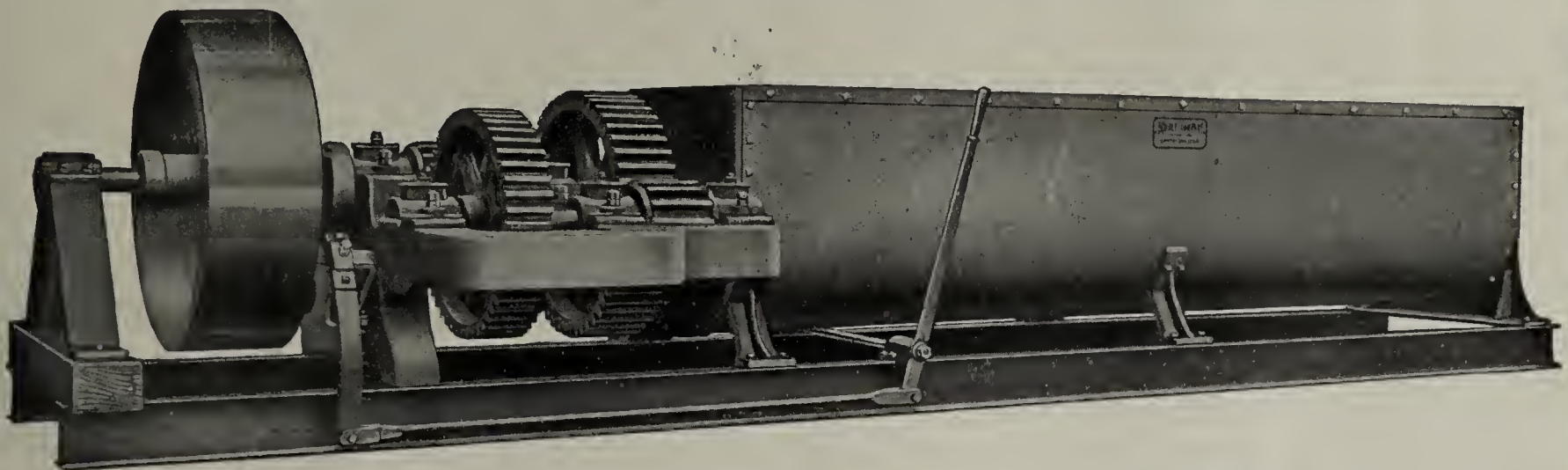
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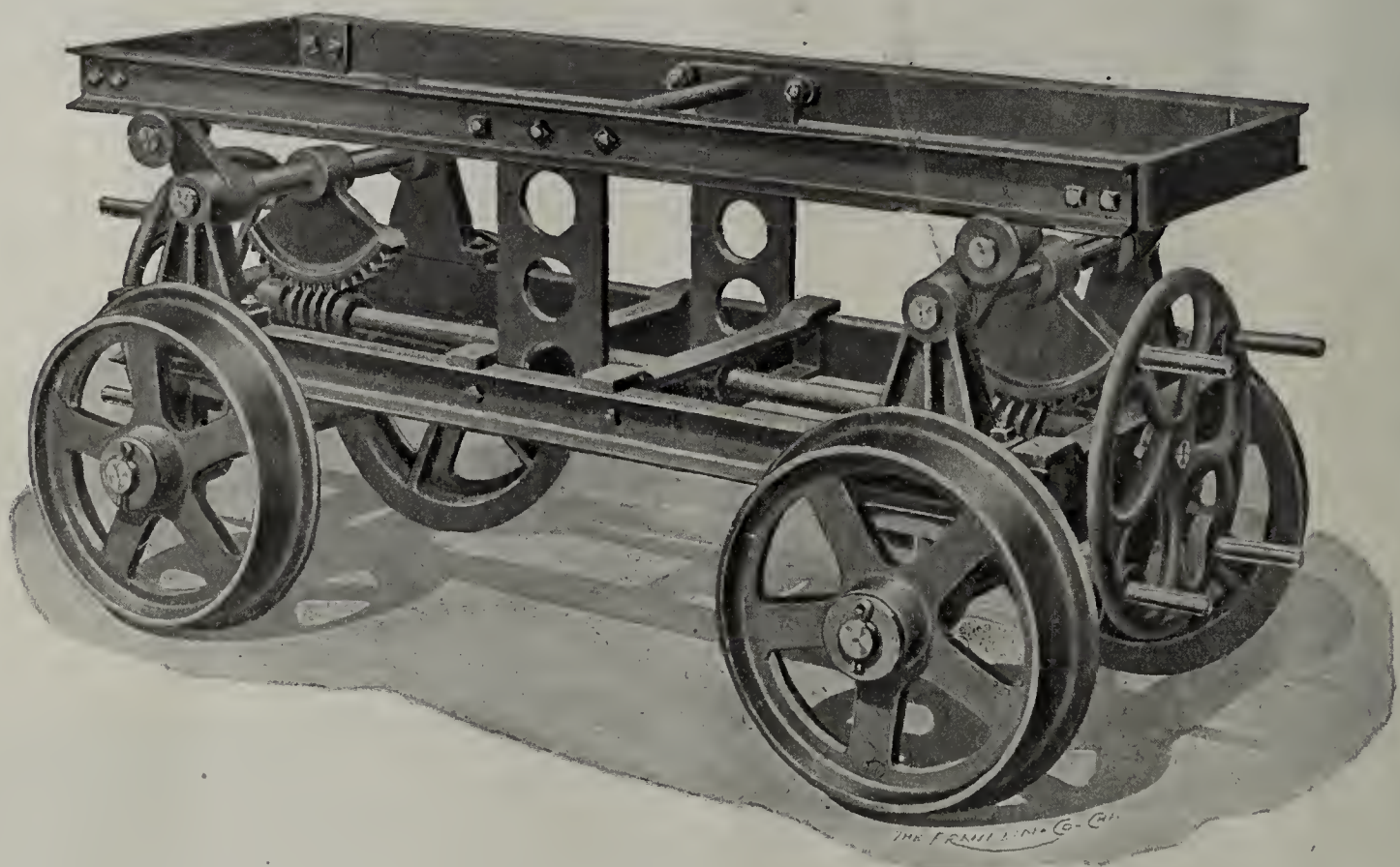
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The J. D. Fate Company
PLYMOUTH, OHIO



Vol. XXX. No. 8.

CHICAGO, APRIL 30, 1907.

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THE MANUFACTURE OF HOLLOW BUILDING BLOCKS AND THE PROBABLE FUTURE OF THE INDUSTRY IN WISCONSIN*

L. T. CRABTREE, Crandon, Wis.

Of all the different lines of industry that go to make up the sum of the world's daily work, that of the brickmaker is, in point of time, the oldest.

How old, how long ago it was that primitive man first learned to pile up pieces of dried clay, one on top of another to make the walls of his rude hut, roofed perhaps with branches of trees and the skins of animals, is a problem whose solution is lost in the mists of the ages. How long ago he learned that clay, if subjected to the action of fire for a considerable length of time, became hard and durable like stone, will also never be known.

Perhaps the walls of the caves in which he and his forefathers have lived for perhaps thousands of years gave him the first idea and the second may have occurred to him when he noticed the effect the fire in his hut had upon the blocks of clay against which it was built.

"Later, he probably found that if he gave a square shape to his blocks of clay that they would fit together better and make a tighter and better wall. After awhile, a long time probably, he got the two ideas to work together and built his hut of blocks of clay, roughly squared by hand or with rude tools and hardened in the fire and the first brick house was constructed; and it took his descendants a long time to take the next step.

To be sure the use of machinery and improved modern methods of manufacture have improved the shape of the brick, made cleaner cut corners and, by better tempering and burning, made it possible to turn out a better brick considered as merchandise but, the fact remains, however, that in the essential part of the brickmaker's art, there has been no particular change or improvement in the merchandise itself, only in methods of manufacture for thousands of years.

Bricks of burned clay are found entering into the con-

struction of buildings, palaces and temples, and in the ruins of the most ancient and extinct civilization known to exist in the world to-day. In Egypt bricks of clay were used along with stone to build the great temples and pyramids and, recent excavations in the ruined cities in Asia along the Euphrates River by Dr. Peters, Hilprecht, Rawlinson and others show that well-made brick of burned clay were used in the construction of buildings erected at least 6000 years ago. The brick used in building the great palaces and temples of Nippur and other places excavated were evidently formed in molds and had even parallel sides and sharp clean-cut corners. Some of them were sun-dried brick but the most of them were kiln-burned and well burned at that, and they were made and laid in the walls about 6,000 years ago.

Even at that remote period the clayworker knew how to put a glaze on his work and he modeled in clay fine figures of men and animals and hardened them by burning similar to our modern terra cotta. During all the centuries that have elapsed since that time until the present generation, the clayworker has been molding bricks, burning them, and making them into solid brick walls. The enormous increase in the price of lumber in the last few years has set many men of inventive turn of mind to devising new kinds of building material and new ways of using old kinds as, witness the recent attempt to make brick from the slag of blast furnaces; brick made of sand and lime; hollow clay brick; also the much-advertised cement block, or rather cement-block machines. Any one who has paid much attention to the advertising pages of the magazines, trade journals, and newspapers for the last year or two, or longer, will likely come to the conclusion that the principal reason for the arrival of the cement-block industry in our midst is due to the absolute necessity of finding or making a market for their wares that the very enterprising gentlemen who make the cement-block machines find themselves "up against." And they are selling them; and, brethren, unless all signs fail, in this country of ours in the next few years, there is going to be an enormous increase in the production of scrap-iron.

*Read at the Seventh Annual Meeting of the Western Clayworkers Association at Madison, March 1, 1907.

CLAY RECORD.

The most, if not all, of our members know enough in a general way about hollow building blocks, hollow building tile, and machine-made terra cotta, as the blocks are variously called so that any particular preamble or introduction is unnecessary. The blocks, as usually made of vitrified and glazed with a salt glaze and are of different sizes, depending some times upon the demand of the market and, sometimes upon the fancy of the manufacturer.

A block measuring $8\frac{1}{4} \times 8\frac{1}{4} \times 16\frac{1}{2}$ in. is the size most used in Ohio and Pennsylvania. Blocks of this size are usually made with walls one inch thick when burned with one chamber, although double-chambered blocks are used there to some extent.

In Indiana and points farther west a web block of this size with four chambers is used more than the single chambered block and, in this case, the walls are made somewhat thinner, about $\frac{3}{4}$ of an inch.

Another size that is used is a two-chambered block measuring approximately $4 \times 8 \times 12$ in. when burned. It is claimed for this size that they make a neater looking wall and are easier to handle in the process of manufacture and in their use in building.

The above are the sizes most used for the exterior walls of buildings but there are other sizes and forms used for other parts of the building that the up-to-date block manufacturer turns out suitable for almost any part of almost any kind of a building and, one who does not know what the block manufacturers have been doing for the past few years will be very much surprised to learn how near a good auger machine, and a few dies combined with brains, will come to making nearly everything, except the hardware and glassware, that goes into the construction of anything from a business block to a fine residence. There are two other sizes measuring $4 \times 8 \times 16$ in. and $4 \times 4 \times 12$ in. that are sometimes used to line the interior walls of buildings in which the larger block are used for the exterior walls. As far as my observation goes, however, the lining block are not very much used. In buildings of the ordinary heights, two and three stories, the walls, if built of the 8-in. vitrified block, are as strong or even stronger than they would be if built of brick as ordinarily constructed and, if the right kind of mortar is used, no moisture is likely to penetrate through the joints to the inside of the walls.

Probably the best kind of mortar for laying up block walls is one composed of equal parts of sand, lime and portland cement. Mortar colors can be mixed with it if desired, to color it to harmonize with the color of the blocks.

We would expect that, during long-continued spells of wet weather, the moisture would, at times, work through the mortar joints the same as it does through brick walls but, in practice, it hardly ever does. It is likely that the large dead-air spaces inside the block walls, become heated by the exterior heat in summer and the interior heat in winter and this, acting through the walls of the block, keeps the thin sheets of mortar in the joints dried out so that no moisture can work through them. For the same reason, the large dead-air spaces in the walls of the house

built of hollow brick in the house so constructed will insure its being warm in winter and cool in summer.

The above will apply to the block as usually used in the construction of the main walls of buildings and, when we have got so far, we have just got started on the list of hollow building material that some of the factories are turning out at their regular output.

I have before me a price list of hollow building material made by one of the large clay-product companies in central Ohio. Some of the different articles listed are as follows: Of the plain hollow construction, there are 10 different sizes and kinds; corners for bay windows, 4 different kinds; window and door caps, 3 styles; bevelled and closed window sills, 3 moldings, brackets and water tables, 6 different styles; veranda posts, 1; steps, 3 styles; hollow cellar pavers, 1; drip stones and gutter tiles, 1 each; chimney caps of different styles, 6; chimney flue linings, 3 kinds; and some of you will likely be surprised to learn that these are all made on one auger machine and, to change from one ware to another, it is only necessary to change the die on the front of the machine.

I saw the most of this work done at the works of the Louisville Brick & Tile Co.'s plant at Louisville, O. There were two auger machines in use at this plant but the work could all have been done on either one of them as they were alike except in size. I cite this particular plant because I examined the work there thoroughly and the superintendent very kindly gave me every facility for learning how the work was done.

This clayworking plant was only one of quite a number that I examined and there are hundreds of large plants in the states of Pennsylvania, Ohio, Indiana, Illinois and Iowa that make hollow building block their principal product.

As in every line of industry, there is, of course, a block trust and, at the time I was there, the block trust owned 50 miles in Ohio alone. In that state, however, there were more independent block mills than were in the trust.

Eastern and southern Ohio are about the center of the building-block business and the magnitude of the business done there would be an eye-opener to one going there, for the first time who had no idea as to the large proportions of this new industry. I have made several trips to central and southeastern Ohio in the past two years studying the clayworking industry and I found the block mills everywhere. In one day that I was out with a team east of Canton, I visited six of them. It is likely that at the start, the men who first started in the block business did pretty crude work. Probably, foundation blocks were first made and then, having gotten the idea, they went further and essayed the walls above the foundation. Then after they had worked out the plain-wall block proposition, they tried the other parts of the building and now a good block manufacturer will turn out, in fine, durable style, window ledges, window caps and casings, door casings and caps, water-tables, cornices, moldings, door steps, the hollow tile for the floors of porches, hollow, round or fluted columns for porches, flue linings for chimneys, or he will build the entire chimney with his block, as well as

the roof. He will make flat vitrified-clay shingles that look as well and will last longer than slate, or he will make fine ornamental tiles of any shape required and, except that for the ornamental tile he will need a press in addition, he makes the whole list on one stiff-mud machine by changing only the first dies, and he makes brick on the same machine.

Inside the house with the same outfit, he will make his partition walls of hollow block, three or four inches thick, all furrowed for plastering and, when a house put up in this way is finished, it is fireproof and the walls thereof will neither decay nor burn down. The foundation walls are also, as you may have surmised, laid up of the large-sized glazed blocks through which no moisture can penetrate from the damp earth outside. The supports under his partition walls are also built of the block and when everything is put in that can be made on the one machine, there is not much left to do except supply the glass and hardware.

Contrary to what may be in your minds, the above is no pipe dream, as I saw it all in one large house near Canton, O., that was built by a hollow-block manufacturer. I was allowed to inspect this house from top to bottom, and there are many others in which the hollow-block construction enters fully as much. All of the work was done on one auger machine except that the ornamental tiles on the roof were made at Akron, O. I am quoting Ohio, as it was in that state that I studied the industry. I do not want to be understood as saying that the hollow-block men were doing all the building material work in their territory. Far from it. There are all kinds of men, and you will find as many different kinds of tastes as men. Some were building of wood, some of stone, some of brick and the "make-a-block-while-you-wait" cement-block men were also there with their machines. Another purpose for which the hollow blocks are well adapted, is the construction of basement walls for barns. Their glazed, moisture-proof walls insures the interior of the basements built of the block, being always dry. Basement built of stone, as usually constructed, are quite likely to be coated with ice during the winter months.

Nor is the use of this new building material being confined to the several producing states named. Large quantities of them are, at the present time, being used in our own state. There are several jobbers of the block among the building-material men and their use is increasing rapidly as they become known. One jobber of building material in Milwaukee told me that last year his firm sold 110 carloads of building block in Milwaukee the previous year and they could have sold more but they could not get the goods. The preceding year when they began to handle the blocks, they sold 32 carloads. From 32 to 110 carloads is a pretty good increase in one year. The block that this firm sold were made at or near Brazil, Ind. I have learned from other parties that some of the Iowa blockmakers are selling their block in southwestern Wisconsin.

Ornamental blocks are also used quite extensively in

place of cut stone and terra cotta in buildings built of brick. If care is taken to select colors that will harmonize, very pretty effects in color with the solid look of brick or stone can be obtained by using pilasters, window caps, and ledges, cornices and other special forms of hollow-block construction, either glazed or unglazed, in buildings of which brick is the main building material.

And it is easy to see here how one of our members whose main output is brick, can increase the local demand for his brick and enlarge his market by either adding blockmaking to his line or, working with his neighbor who makes the blocks, go after the business with a full line of building material, plain brick and as much of the ornamental as any house ought to have, and all made of clay.

For the exterior walls the block are nearly always glazed, except that sometimes, to produce some color effect by way of contrast, they are laid in the wall partly glazed and partly unglazed. The glazed block are more durable than the unglazed and they are certainly cleaner and, as the difference in the cost between the two is only the price of a few shovelfuls of cheap salt to a kiln, the cost is about the same.

Plain-faced blocks are used to some extent, but as a rule some figure is pressed into what is to be the exterior face of the block as laid in the wall. The figures or patterns that are used in the most of the block are different patterns of what are called "rock-faced" or imitations of cut stone and they are pressed into the soft clay as it comes through the die by figured rolls attached to the face of the machine. The cost of a building constructed of hollow block will be less than either brick or stone or lumber for the same work at the present prices of lumber.

An important point to be considered in favor of glazed-block construction is that walls built of them will retain their new and bright appearance for years, as their glazed, glass-like faces are entirely impervious to any and all kinds of weather and they never look stained or dirty and any dirt or dust that may adhere to them is washed off by the first shower.

For some reason, possibly due to the lack of suitable clay for the work, the clayworkers of Wisconsin seem never to have gone into the manufacture of the blocks. There may be a few who have tried it but, as far as I have been able to learn, there is not now a block manufacturer in the state. If there are any such, we would like to hear from them and have them tell us their experience with Wisconsin clay in blockmaking.

In order to make a good merchantable block, it is necessary to have a clay that will vitrify and take a good salt glaze but, as a clay that will vitrify will nearly always take a salt glaze it, will only be necessary to speak of the vitrifying quality. A good vitrifying clay must possess certain specific properties. It must contain large enough proportions of the two refractory clay elements silica and alumina, combined with large enough proportions of the fluxes so that, in the burning, the silica and alumina will act as a sort of framework to hold the ware in shape for some time after the fluxes are in a state of fusion. In

order to accomplish this result, there must be a range of nearly 300 deg. in temperature between the melting point of the fluxes and that of the silica and alumina.

In order for clay to stand up to vitrification, it is necessary that the silicate of alumina should constitute between 70 and 80 per cent of the whole body of the clay.

The usual fluxes are iron, magnesia, lime, potash and soda. If the silica and alumina constitute too small a part of the clay, the material for the framework is lacking and, at the melting-point of the fluxes, the ware collapses or melts and runs together. I am not familiar enough with the general clay situation in Wisconsin to be able to say what our members may be able to do in the block-manufacturing business as suitable clay is necessary and the past geological history of our state is rather against our clayworkers in that respect.

Our brethren in the business in the states to the south of us have a great advantage over us in that regard as they have great deposits of the finest kinds of clay for the purpose in the fireclay found under the coal veins and the great inexhaustible beds of shale which have been lying there undisturbed for perhaps millions of years.

In other states like Ohio and Indiana where the manufacture of high-grade clay ware is one of the greatest industries of the state, regular prospecting in search of clay beds is carried on on a large scale by deep borings and clay is often mined from deep mines. In many cases it is almost equal to coal mining in the extent of the operations.

In order to go into the manufacture of hollow block, a stiff-mud outfit is, of course, necessary. Down-draft kilns, preferably of the round-topped style, are also necessary. Rectangular kilns are probably as good for vitrifying work but the round-topped are the best for glazing as it is found in practice that the gases are better confined and condensed upon the wares. There is no question, I think, that there are clays in certain parts of the state that will vitrify and glaze if properly treated in the manufacture and there are doubtless many more that are not suitable for the work as taken from the bank that can be made so by the simple process of weathering.

If the clay be taken from the bank and piled upon the ground or upon platforms and left there for several months subject to the rain or snow, the freezing and thawing of our very changeable climate, much of the fluxing ingredients will leach or wash out of it and the silicate of alumina will remain, and a clay with a very low melting or fusing-point may, in this way, often be made quite refractory.

Another way is to mix high-grade clay with the impure clay to effect the desired results and that can be done quite successfully in many cases. There are a number of clay-shipping firms in the fireclay and shale belt who will furnish you with clay by the carload of almost any required composition to mix with your low-grade clays to accomplish almost any results you may desire. I do not wish to be understood as trying to give the impression that hollow block will ever take the place of common brick of clay. They will continue to hold the place that they have held from so long ago that "the memory of man runneth not

to the contrary" as the chief building material. There is a compact, solid look about a well-built brick wall, combined with its well-known durability, that appeals to any one who is building for permanency. But this very quality makes it hard to produce any very striking color or architectural effects using brick alone. Hence the almost universal use of cut stone or hand-made terra cotta in brick buildings to produce the ornamental effects. These, however, are expensive and hollow clay work, glazed or unglazed, can be made that will work in with brick to give almost any kind of ornamental or color effect required and at much less cost than either stone or terra cotta.

Is it not better to do this when it can be done, by the brickmaker or his brother clayworker than to allow a large part of the cost of buildings to go to the terra-cotta or cut-stone man? It can be done and it is being done in many places to-day. On this account the development of the hollow-brick business in this state will help the brick business.

Anyone at all conversant with the condition of the lumber business now and for some years back, cannot help but see that the general use of lumber for building purposes cannot last but a few years longer. It has almost become a luxury now. Within a few years, not more than six or seven, the price of hemlock, the most commonly used lumber for building purposes, has advanced upwards of 300 per cent and the pine and basswood are already out of reach for that purpose except in the low grades. A few years more and they will all be practically exhausted in Wisconsin.

There will be left large areas of timber land on the Pacific and gulf coasts, but this is all being gathered in by rich lumbermen and syndicates and I have never heard of any very pronounced philanthropists among these gentlemen. They will own the last and only source of supply and will ask the highest possible price for what they will condescend to sell to a lumber-hungry nation. When that time comes, and it is not far away, people will have to use something else than lumber for common building material. Nothing fills all requirements like burned clay and nothing has been so long and favorably known. Bricks and hollow blocks, working together and supplementing each other, will take care of all specifications both for the staple and the ornamental, and they also have the merit of being the cheapest. We should get ready for this for, if we are ready with the goods, we will get the business.

ALIENS CAN HOLD CLAY LAND

Olympia, Wash.—The constitutional provision which permits aliens to own mineral lands in Washington extends to lands containing silica, silicated rock and clay, used in the manufacture of cement. Such is the decision of the state supreme court today in the case brought in the name of the state to cause an escheat of property in Whatcom county, brought May 4, 1906, by Ernest E. Evans, an alien. The ownership of mineral lands only covered lands containing the precious metals, but the court holds that the minerals include silica, clay and practically everything of a mineral character not vegetable.

CONCLUSIONS DRAWN AS TO BEST METHODS OF HANDLING CLAYS UNDER VARIOUS CONDITIONS

The following conclusions have been drawn from the cost data published in the March 30th number of this magazine under the title of "Methods and Estimates of Cost of Handling Clay and Clay Materials." The conditions to be carried in mind are:

Thickness of bank:

- I, banks under 5 feet in thickness.
- II, banks between 5 feet and 22 feet in thickness.
- III, banks over 22 feet in thickness.

Quantity used:

- 1, 20,000 to 50,000 capacity (50 to 140 tons).
- 2, 50,000 to 80,000 capacity (140 to 225 tons).
- 3, 80,000 to 100,000 capacity (225 to 280 tons).
- 4, 100,000 capacity upward (280 tons upward).

Density in bank:

- a, glacial, loess, or soft shale clay.
- b, hard shale.

I.

1-4, a. Spading necessary in some cases where deposit is only a foot or two in thickness, and clay must be rather carefully picked over as in several Wisconsin plants (cost 17 cents to 40 cents per ton).

Wheel scrapers or clay gatherers with tramcar most economical under such conditions that they can be used. (Cost 5 cents to 10 cents per ton).

Steam shovels cannot be operated economically in such a bank.

1-4, b. Such deposits of hard shale seldom found, and very rarely worked.

II.

1, a. Spading out of the question in almost every case.

Wheel scrapers and clay gatherers with the tramcar necessary for most economical operation where clay is air dried upon the pit, or must be mixed in proportions not found as the clay lies in the bank. (Cost 4 cents to 9 cents per ton).

A 25 ton steam shovel may be used most economically in most cases if several days supply is handled by continually operating the clay winning plant.

1, b. A hard shale is seldom used in so small a plant, but when used is excavated by blasting.

2, a. The same may be said of such a plant as was said in case 1, a.

The 25 ton steam shovel is amply large to excavate the required amount of clay.

2, b. Blasting generally resorted to if a hard shale is used. A 60 ton steam shovel such as would be necessary to stand the heavy strains of excavating such a shale might be used economically in a few cases.

3, a. Wheel scrapers and clay gatherers necessary in cases mentioned in 1, a.

35 ton steam shovel most economical means of excavating in a majority of cases. (Cost 4 cents to 7 cents per ton).

3, b. A 60 ton steam shovel is the most economical

means of excavating the shale. (Cost 5 cents to 8 cents per ton).

Blasting and loading by hand cost approximately 12 cents per ton in this case.

4, a. Wheel scrapers no more economical than in case 1, a.

A 45 ton steam shovel most economical for 100,000 capacity plant, and will handle sufficient clay for a 150,000 capacity plant under favorable conditions.

4, b. A 60 ton steam shovel will handle satisfactorily a shale of almost any density in amounts sufficient for a 100,000 capacity plant. Larger plants require correspondingly larger shovels.

III.

1-4, a and b. Where glacial clays and shales are found in bank over 22 feet in depth and the entire depth is to be worked the safest plan and the one generally followed is to divide the bank into two cuts. The costs are practically the same as in section II.

NOTES. The brick used as a basis for figuring capacities of plants was the standard common brick which has an average weight of 5.6 pounds of green clay (size 8¼ inches by 4 inches by 2½ inches).

Where shovel is not run up to its capacity and is "loafing" a part of the time very little difference in operating expenses per day can be allowed and the increase of cost per ton must be taken into account as in same cases above.

All interest, depreciation and repairs taken into account when estimating costs per ton.

Cost per ton delivered at shed given in estimates.

RIVAL CONCERNS IN SEWER PIPE AND FIRE PROOFING GET BUSY.

Shrill and clear sounded the tocsin of industrial war when official announcement was made that the American Fire Proofing Co., Pittsburg, Pa., was about to engage in the manufacture of sewer pipe.

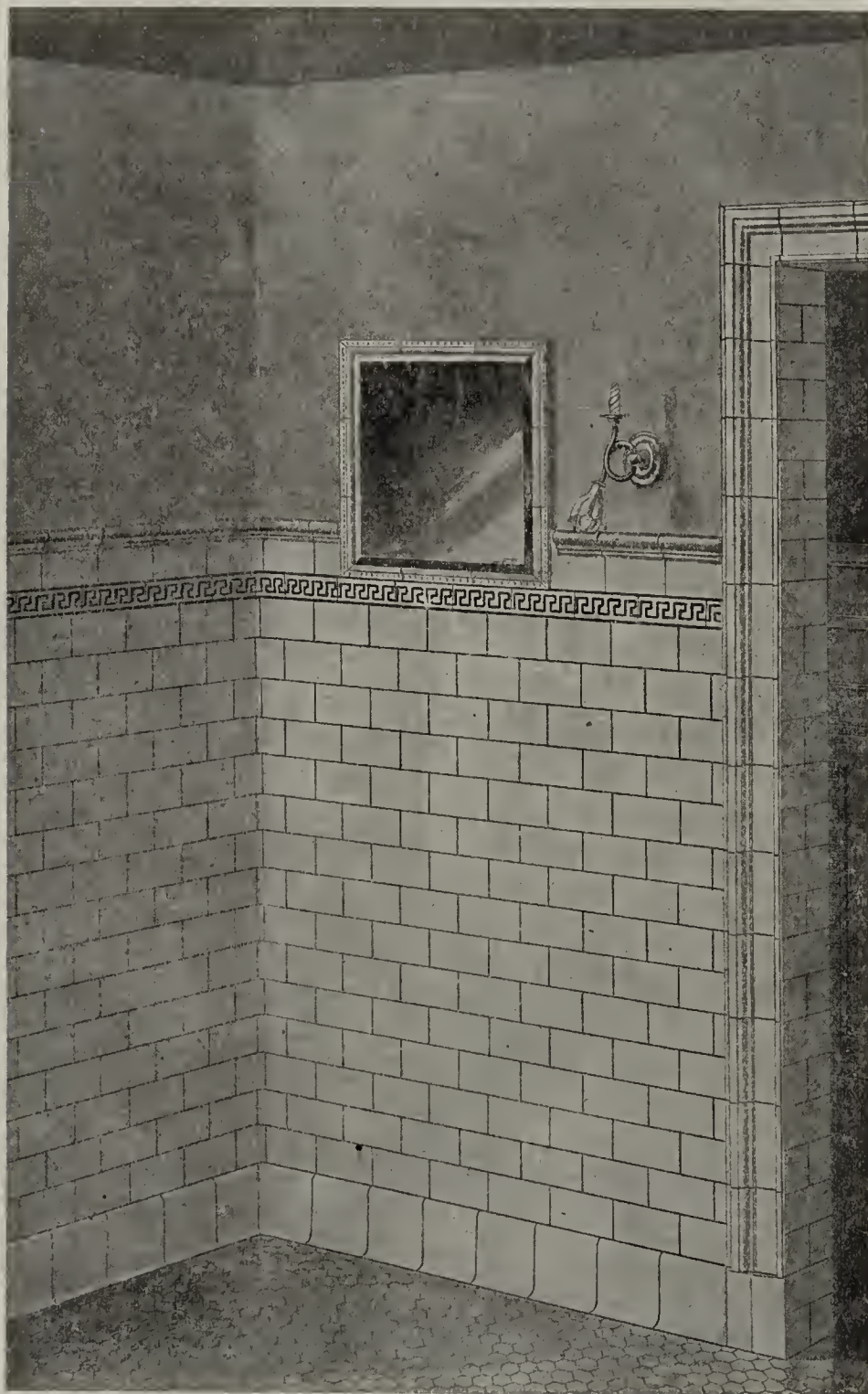
It has been known for some time that the fire proofing company was taking steps looking to an invasion of the field occupied by the sewer pipe company, and it has also been known that the sewer pipe company has been experimenting with a view to manufacturing fire proofing. After the annual meeting of the sewer pipe company it was announced that W. B. Goucher, treasurer of that organization, had resigned and later the statement was made that with S. B. Goucher, manager of the sales department, and Samuel McAdoo, superintendent of plants, would begin the operation of a string of sewer pipe plants under the name of the Goucher-McAdoo Co.

The announcement by President W. D. Henry of the fire proofing company was that through this new corporation it would at once begin the manufacture of sewer pipe.

Just how vigorous the sewer pipe company will become in the production of fire-proofing material has not been made known, but it is asserted that it is in position to push its product in the market. The declaration of the dividend when it was not expected in some quarters shows its financial strength.

THE TILED WALL.

Of all wall coverings, paper, cloth, papier mache, sheet metal, marble and tile, that of the tile is the best from almost every standpoint from which it is considered. All of the articles just mentioned have their legitimate uses in the human arts, but in the matter of wall covering they must in most instances yield to the clay tile.



Tiled Walls of a Bath Room

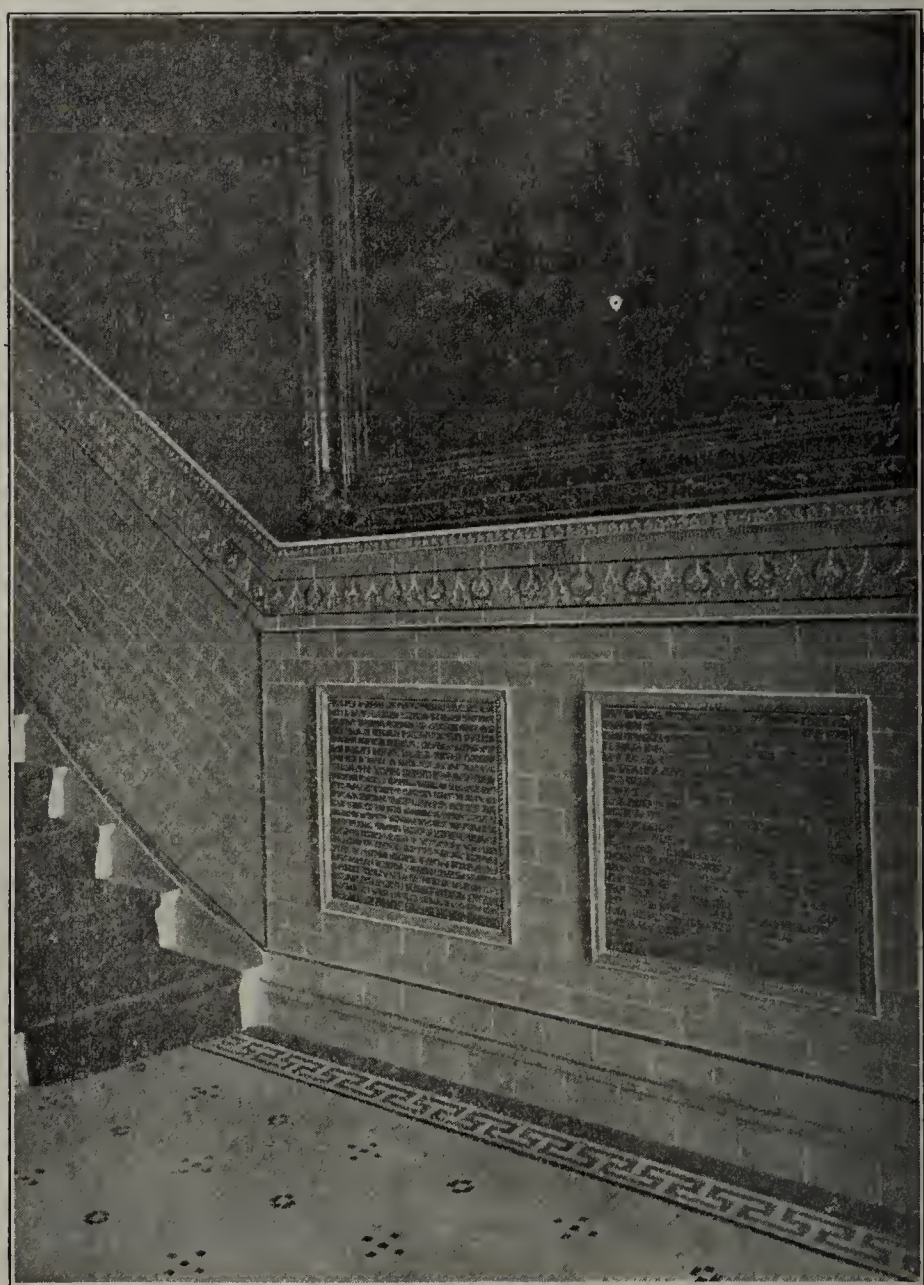
First, from a constructive standpoint: baked clay is harder than glass or marble or other natural stones. It cannot be scratched with steel. It is fire-proof, and cannot even be scorched by a flame. It withstands knocks and blows without chipping as glass, without tearing off as paper, or cloth, without peeling as paint and enamelled sheet metal. It is non-absorbent and cannot be stained by liquids, not even acids.

From the standpoint of cleanliness and sanitation: tiles are non-absorbent and can easily be washed. They are absolutely sterile as far as germs are concerned, and bacteria cannot live within them, as they do in wall paper, cloth wall coverings, and wooden wainscoting.

From the artistic standpoint: tiles are made in an almost endless variety of color, form and shape, and can therefore be applied in any design of color or form ranging anywhere from the plain white oblong tile to the most highly colored faience work. In this respect it is far superior to marble, the color range of which is rather limited. The large majority of the most decorative walls of this country, and especially of Europe, are made of clay tile or faience work.

From an economical standpoint: the tile wall virtually lasts forever, and for that reason it is by far the cheapest in the long run.

The constructive and sanitary properties of the tiled wall advise its use in bath-rooms, kitchens, laundries, butlers' pantries, hospitals, drug-stores, lunch room, dairies and butchers' stores. Its durable qualities are especially valuable in vestibules, stairways, underground passages, corridors of public buildings, banks, theatres, railway stations, and



Tiled Wainscot

public baths. Its artistic possibilities recommend its use in hotels, art galleries, exposition buildings, and in public buildings of all kinds. The tiled wall is the counterpart of the tiled floor, and the two should nearly always supplement each other.

The economical character of the tiled wall should lead to its adoption in every place where a wall that is liable to knocks, blows and stains, has to be kept in an attractive condition.

MAGNESITE BRICK NOT CLASSED AS FIRE BRICK BY CUSTOM OFFICIALS

Another step in the litigation over the customs classification of plain magnesite brick has been taken by the United States circuit court for the eastern district of Pennsylvania, which decided that the article in controversy is not fire brick, and therefore not entitled to an assessment of \$1.25 per ton.

Judge McPherson affirms the action of the collector of customs in levying duty at the rate of 25 per cent ad valorem for "brick, other than fire brick, not glazed, enameled, or decorated," this action having the effect of reversing the board of general appraisers, which had granted the protest of O. G. Hempstead & Co., for duty at the rates specified for fire brick. The brick in question are used as linings for retorts, etc.

"It will be observed," says the court, "that the decision of the board was apparently much influenced by a communication from R. W. Moore, a chemist in New York, which was evidently regarded by the board as competent evidence, although it was purely an ex parte statement, not under oath, and not subject to cross-examination by the government.



Tiled Walls of a London Butcher Shop

"It scarcely need be said that Mr. Moore's letter was incompetent, and should not have been considered. I have laid it aside entirely, and base my conclusion solely upon the testimony that was taken in the regular way before the board, and under the order of the circuit court. This testimony I shall not discuss in detail.

"It is enough, I think, to say that, as the decision of the case evidently turns upon a question of fact, the government's witnesses have satisfied me beyond doubt that 'fire brick' is a phrase with a well-known commercial designation in the trade; that it means brick made from fire clay, and that magnesite brick is not commercially understood as being included within its scope.

"On the contrary, when magnesite bricks are wanted, they are always ordered by name, and never as 'fire brick.' The testimony establishes these facts clearly, and the result is that the commercial meaning of the word, according to well-established rules, must prevail. The decision of the board of general appraisers is reversed, and the classification of the collector affirmed."



Tiled Walls, Hall and Stairway.

TOLEDO COMPANY WINDS UP AFFAIRS AS RESULT OF INDICTMENTS.

Toledo, April 26.—The Toledo, Ohio, Brick Supply Co., which for more than 10 years has been the inner works of the alleged "brick trust," and whose officials were indicted by the Lucas County grand jury, along with the rest of the brick manufacturers, for restraint of trade in violating the Valentine anti-trust law, is closing up its business, and does not expect to figure in the local market any more. W. O. Dakin, general manager of the Toledo Brick Supply Co., when asked whether recent indictments of the grand jury had anything to do with the dissolution of his company, said: "Oh, well, the contracts the company had with local manufacturers expire in May, and the company has deemed it best not to renew them under present conditions, hence our dissolution."

Mr. Dakin insists that labor was responsible for the increased cost of brick, and declared the unions were the ones who pressed down the builder.

PROPER MIXTURES AND MIXING FOR MAKING SAND-LIME BRICK*

BY C. B. EBERT.

In this paper I shall deal with the mixture of the materials rather than the mixing devices.

The mixing of the raw material for the manufacture of sand-lime brick, is a small matter in one sense, but a very large one in another. One of the first and most important things for consideration is, what have you to mix? Usually no other raw material than sand and lime enters into the combination of sand-lime brick, so it behooves the uninitiated to have his two materials examined and thoroughly tested before investing his good money in a sand-lime brick plant. It is said that any sand is suitable providing it consists principally of material containing silicic acid, which is the case almost everywhere, and more especially with bank or river sand and sandstone rock. A large portion of calcareous marl will make the sand useless, as the substance can not participate in the chemical transformation into silicates of lime. On the other hand, sand composed of small pieces of limestone has produced a very firm hard brick, when mixed with a small portion of finely ground clay in addition to the hydrated lime, but I do not recommend this sort of a mixture, because the brick of such a composition are not as refractory, in case of fire in a building in which they have been used. When the brick becomes hot enough to burn the small pieces of lime that are in them, and water is thrown on the walls of the building, the limestone particles will slake, burst the brick and cause the walls to crumble.

We are also told, that a small amount of fine loam will be of no disadvantage. Again I differ with that theory, because I have seen sands in which the individual grains were coated with a very fine loam or clay dust. This coating prevents the lime from coming in contact with the silica, consequently making an improper bond and a punky brick.

You can run this same sand through a washery to remove the loam, and you will have the silica in the proper shape, but that adds to the cost of production.

Again, some very good looking and hard brick have been produced from sand and loam mixed, but I would not care to use such brick in a building, as they would disintegrate by frost or fire.

A high percentage of silica is very necessary, and without it you can not expect to get good results. Candidly speaking, it is a hard proposition to get a perfectly clean sand in the ordinary bank on account of the vegetable matter and soil on the surface, that caves down as the bank is worked. In such cases it is best to remove all of the top soil, prior to working the bank.

With river sand, you may get a good quality for a short time, and when the freshets come and deposit mud and slime on top of your sand, you are really up against a bad proposition. My advice in working river sand, is to get it out in large quantities and keep a supply ahead, so that it is unnecessary to go into the river immediately after a freshet, for your daily supply.

*Read at the last meeting of the National Association of Manufacturers of Sand-lime Products, recently held in Chicago. The discussion on this article will appear in the next issue.

Sea sand is being used for brickmaking, but some have used it to their sorrow. Sea sand that comes in contact with the salt sea water will not make a good bond with the lime; again this class of sand is of the round grain variety. The only sea sand that is practical to work, is that which has been away from the sea water for years, and has been purified by the elements.

I was told by a man who has had charge of masonry work for one of the large railroads of the South, that in the whole State of Florida there was only one deposit of sand suitable for masonry work, and it was located about forty miles inland from the Gulf of Mexico, although there are a number of plants making sand-lime brick in that State.

Another matter of great moment in selecting sand is, to get it of varied sized grains. If it were possible to get it proportioned as follows, you need not worry about results: 20 per cent passing 20 mesh, 20 per cent passing 40 mesh, 20 per cent passing 60 mesh, 20 per cent passing 80 mesh, 20 per cent passing 100 mesh screens, providing it is a clean, sharp sand, and you are using a high calcium lime in your mixture, in proper proportions, you will get good results. Where you use a coarse sand of nearly one size grains, you will not be able to make a compact brick, impervious to water.

You must have a sand that has various sized, sharp grains, so that the smaller grains will fill the voids between the larger ones, also about 20 per cent of silica flour of 100 mesh and finer, if you intend making a high grade brick.

Lime—We are told that ordinary white lime, in a burnt condition, as used in making mortar for masonry work, is suitable. Also agricultural and shell lime can be used.

My advice to you is, go slow with the use of lime in this work unless it has been chemically analyzed, and practically tested with the sand you intend using. It is also necessary that your lime should be tested often, even if you are getting it from the same quarry and kilns. Limestone like all other mineral formations, runs in strata, and the various strata will vary in composition.

Without prejudice toward those using, or engaged in producing hydrated lime for sand-lime brick making, I must say that I personally prefer to use lump lime and hydrate it on the brick plant.

From what I can learn of some of the systems of hydrating as done at the lime company's plant, time governs the process. The lime is dumped into the hydrating machine or on the floor of the hydrating room moisture added and allowed to remain a certain length of time, or worked by conveyors, etc., according to the style of the machine used, until the allotted time is consumed, and called hydrated lime.

That system may answer providing the chemical composition of the limestone from which the lime is burned, is uniform. I know of one instance where a brick company decided to use lime, hydrated by a lime company. They ordered a carload, used the lime in one day's run and when they removed the cylinder head, they found about as many brick off the cars as on; the cause being, that the so-called hydrated lime was not thoroughly hydrated and had ex-

panded in the brick when under steam pressure and water vapor.

That demonstrates the fact that if there are any particles of unslacked lime in your brick when pressed, the steam or water vapor in the hardening cylinder will finish the slaking process and burst your brick.

As to the percentage of lime to be used, you must take into consideration that the composition of your lime and sand that enters into the mixture. You are told that 5 per cent of lime and 95 per cent of sand is the standard mixture, but is this 5 per cent of calcium lime, or 5 per cent of lime containing 30 to 50 per cent magnesia? You must have the necessary percentage of calcium hydrate to bond with the silicic oxide to form hydro-calcium-silicate or sand-lime brick. We will find brick-layers who say they have to use 10 per cent lime. Are they really using 10 per cent calcium hydrate, or are they using 5 per cent of calcium hydrate in the 10 per cent bulk? Such things are often overlooked.

It has been thoroughly demonstrated that 5 per cent of calcium hydrate, with clean sharp silicic oxide, is a sufficient amount to make hydro-calcium-silicate or sand-lime brick. A proper mixture is governed by the quality of the sand and lime to be mixed, and when the mixture is made damp, a chemical combination takes place and forms silicate of lime.

If the moisture is introduced in the form of steam, the formation of the silicate of lime is more rapid. The silica sand is set free and coats the grains of sand which are brought into contact with each other, by the pressure exerted by the press in forming the brick, and a petrification ensues with a result that you have as near a natural sandstone formation as it is possible for man to make. To satisfy your optical sense, place a broken sand-lime brick and a piece of natural sandstone of similar texture under a glass, and note the similarity.

If you use a high calcium lime virtually free from magnesia and a clean sharp silica sand, you have an easier proposition than the fellow who has a magnesium lime and clean sharp sand, because he will get a chalky brick. Again if you have a high magnesium lime and round grain sand, you can get a good bond, you have a chalky brick and you can rub the grains of sand from a hardened brick with your thumb or finger.

Should your lime contain a high percentage of calcium and be practically free of magnesia, your sand round grained, you will not get a good brick, while if you are using a high magnesium lime and a loamy sand, either sharp or round grain, your troubles will be too numerous to mention.

As to the methods of mixing the sand and lime by mechanical devices, I prefer to deal with that matter lightly as there are so many different opinions on the subject. Each system of hydrating, grinding and mixing of lime with sand, has its supporters, each having some strong points to present. The dry crushed lime, tube mill grinding of lime with a portion or all of the sand used, followed by dry and wet mixing with the 24 hour silo hydration before pressing; the vacuum hydration and mixing by batch;

the hydration of lime in hardening cylinder, pulverizing, proportioning with sand direct from bank, mixing and pressing, are the leading systems, while others have invented methods of their own. By the tube mill system, the sand must be absolutely dry to prevent choking the tube mill. By the steam hydration and no tube mill, sand can be worked as moist as it comes from the bank.

While the dry process requires 24 hours to prepare the material for the press, the wet process requires less than thirty minutes for the sand to go from the bank to the hardening car. With the latter, a dryer is only necessary when your sand necessitates screening.

Very good brick are being produced by the various methods of mixing, but it lies with the users of these various methods to say which one entails the least cost and produces the best results.

Quite a number of you gentlemen can speak for the various methods as you have tried most of them. None of us are too old to learn something new, and something to our advantage, if we can only convince ourselves that we don't know it all right now, and the other fellow knows nothing.

Many a brickmaker has made a success by accident, mixed with a little common sense (which is defined by a noted writer, as sense that is not common), while many a man with money, good habits, honest and industrious, has failed trying to study where he has made his mistakes, and by being satisfied with his own dear self, and the bounds of his own little realm.

GERMAN PRINCESS IN BUSINESS.

The Kaiser, who inherited from one of his wealthy subjects a porcelain factory at Cardinen worth about 6,000,000 marks, is not, says the Glasgow Herald, the only royal man of business in Germany.

The Prince of Lippe-Detmold makes the major part of his income from the sale of butter and eggs from his estate and bricks from his limekilns. His civil list is small, and he keeps up the royal state of his little principality (he looks into three countries from his drawing room windows) by the revenues from his personal property.

Prince Bismarck had the monopoly of supplying the telegraph poles for the German empire and had a distillery in which he produced a particularly vivacious schnapps which is said to be "a near thing to a torchlight procession."

Prince Guido von Henckel von Donnermarck is not only the richest proprietor in the German empire, but is also a silk manufacturer.

Prince Christian Kraft von Hohenlohe, Duke of Ujest, is not only a mine owner but also the owner of the Hohenlohe Meal factory, the Hohenlohe Cake bakery and—horrible to relate!—the Hohenlohe Corset factory.

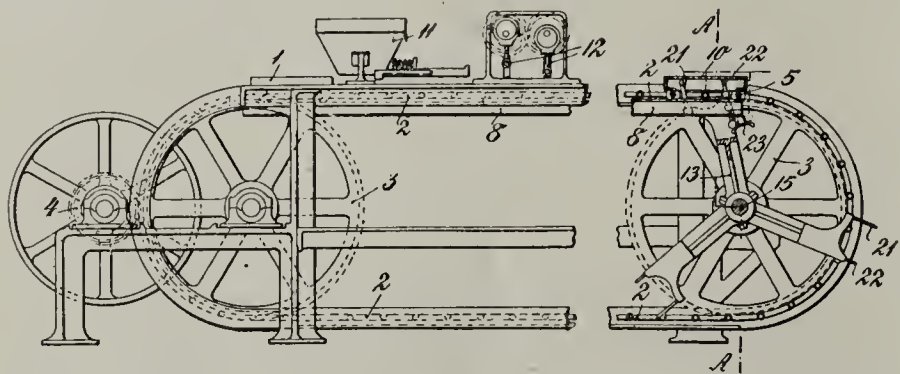
Prince Max Egon von Furstenberg, the richest aristocrat in Germany and friend of the Kaiser, is a brewer, and the "Fuerstlich Fuerstenbergisches bier," has more than a local reputation. It is the Kaiser's favorite beer and the prince has the exclusive privilege of supplying the beer for the whole of the royal household.

NEW INVENTIONS THAT ARE OF INTEREST TO THE CLAY MANUFACTURER.

These new inventions are those that are especially of interest to anyone engaged in the line of building materials and their manufacture, or machinery to make them.

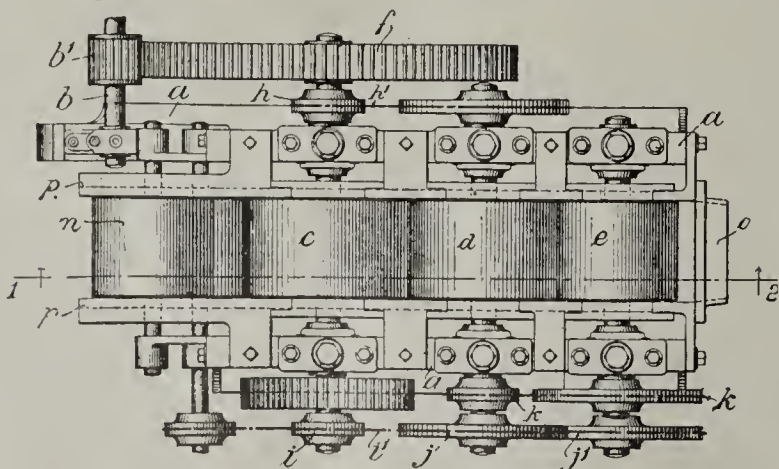
844,602. Machine for Making Cement Roofing-Tiles. Joseph Liening, Leer, Germany. Filed Aug. 13, 1906. Serial No. 330,502.

Claim—In a machine for the manufacture of cement roofing-tiles, the combination of molds for the tiles having removable bottoms arranged therein, endless-chain conveyers for automatically conducting the molds consecutively to the different devices for making the tiles, means for vertically turning the endless-chain conveyers with the molds after they have left the last of said devices, means for raising the removable bottoms above the edges of said molds with the tiles resting upon them before they are turned said means being arranged below the molds and so disposed that the bottoms are raised by them above the edges of the mold.



In a machine for the manufacture of cement roofing-tiles, molds for the tiles, loose bottoms in said molds, endless-chain conveyers for automatically conducting such molds one after the other to the different devices for making the tiles, means for turning the endless-chain conveyers with the molds vertically after their having left the last of said devices, a spider for raising said loose bottoms before the vertical turn of the molds, said spider being rotatably arranged below the filled molds and within the room inclosed by the endless-chain conveyers, said spiders keeping said bottoms in the raised position, dog-pins on the end of each spider-arm for engaging the loose bottoms, some of said dog-pins being arranged movably, means for moving said movable dog-pins in such a manner that the loose bottoms are raised in horizontal position.

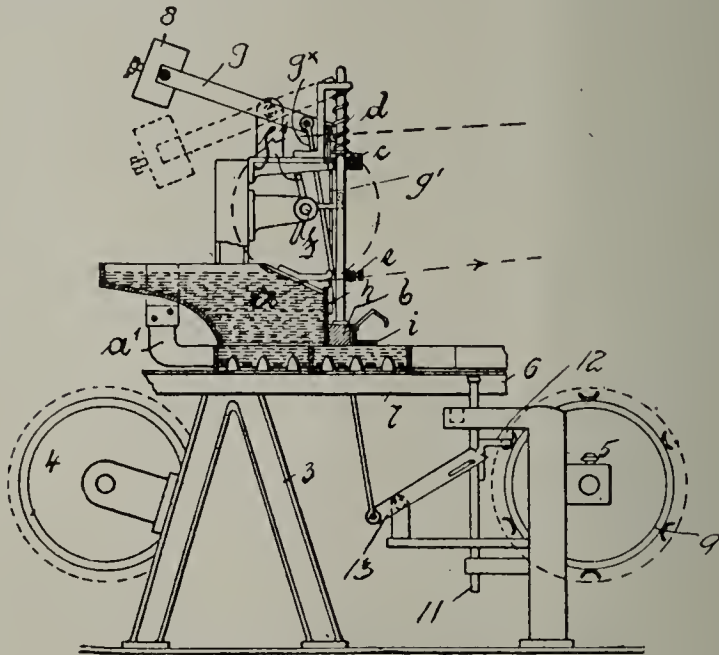
845,329. Plastic Brick or Like Molding Machine. John W. Bottomley, Leeds, England. Filed Oct. 12, 1906. Serial No. 338,624.



Claim—In a plastic brick or like molding machine, a plurality of rollers arranged in pairs one behind the other, the second or each succeeding pair of rollers being of smaller diameter or set farther apart than the preceding pair of rollers to give a gradually-increasing clay-space between each pair of rollers, in the manner and for the purpose substantially as herein shown and described.

The combination with two or more pairs of rollers, each succeeding pair being of smaller diameter than the preceding pair, or otherwise of the same diameter, and set farther apart and means for driving said rollers and confining the clay at the ends of the rollers, of plates or clearers secured in the angles between each pair of rollers to prevent the clay being carried forward between adjacent rollers in each pair of rollers, all constructed, arranged and operating substantially as herein set forth.

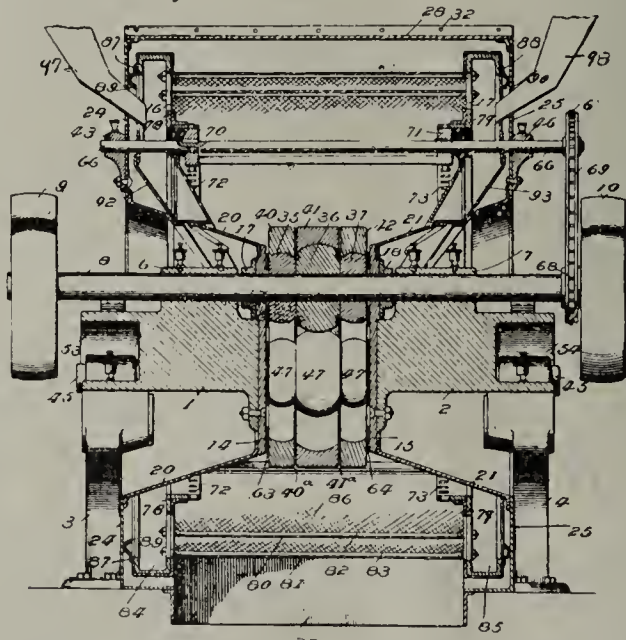
845,146. Brick-Press. Paul Thomann, Halle-on-the-Salle, Germany. Filed June 22, 1905. Renewed Jan. 8, 1907. Serial No. 351,394.



Claim—A brick-press comprising a hopper, a vertically-movable slide closing the front of the hopper, a passage beneath said hopper, a mold in said passage, means for moving the mold, a scraper forming with the slide a guideway, a stamper adapted to move in said guideway, a spring tending to press said stamper downwardly and a cam for raising the stamper.

845,661. Grinding or Pulverizing Mill. William S. Osborne, Marietta, Pa. Filed Sept. 17, 1904. Serial No. 224,870.

Claim—In a pulverizing-mill, a series of independent revolving rings, in combination with a series of rolls located within and imparting rotary movement to said rings, the rolls being of different sizes whereby a gradual reduction is attained, substantially as described.

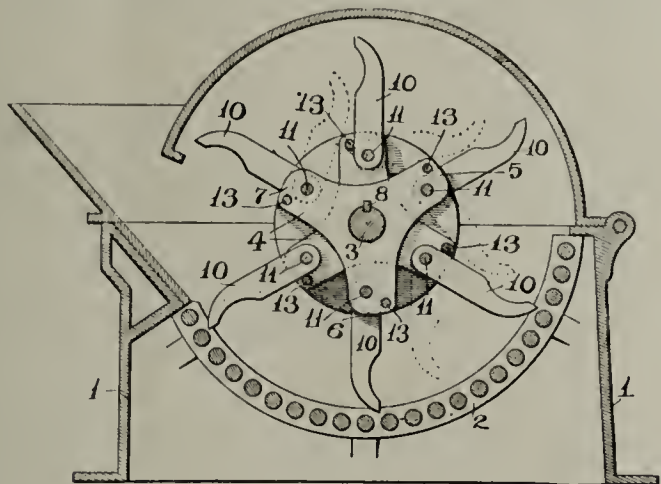


The combination in a pulverizing-mill, of a driving-shaft, a grinding-ring, a roll carried by said shaft and imparting rotary movement directly to said ring, supplemental shafts, a grinding-roll supported on each of said shafts coacting with said ring to grind material between said rolls and said ring, and a frame having openings within which the bearings of said shafts are located, and spring-mounted devices

also located within the openings in said frame for forcing the last-mentioned rolls against said ring, substantially as described.

845,171. Crusher and Pulverizer. William H. Gardner, Basic City, Va., assignor to Williams Patent Crusher & Pulverizer Company, St. Louis, Mo., a Corporation of Missouri. Filed Dec. 28, 1905. Serial No. 298,611.

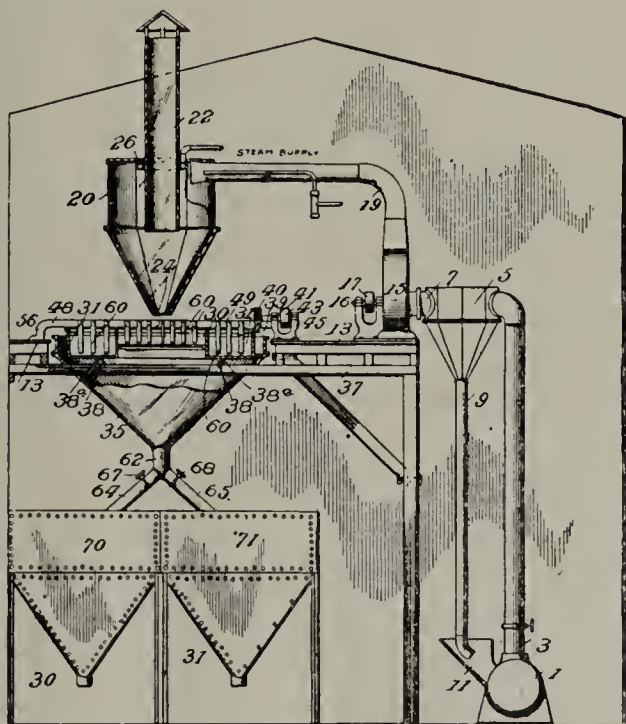
Claim—In a machine of the class described, the combination with a shaft, of hammer-supports connected to said shaft and each consisting of a plurality of radially-extend-



ing wings, said hammer-supports being so arranged that the wings of one support are arranged midway the wings of the adjacent support, hammers pivotally connected between the outer ends of the wings of alternate supports, and continuous rods extending through the wings of the supports in front of the pivots of the hammers and adjacent to said pivots to limit the forward movements of the hammers; substantially as described.

845,189. Apparatus for Hydrating Lime. William S. Osborne, Marietta, Pa. Filed March 2, 1905. Serial No. 248,096.

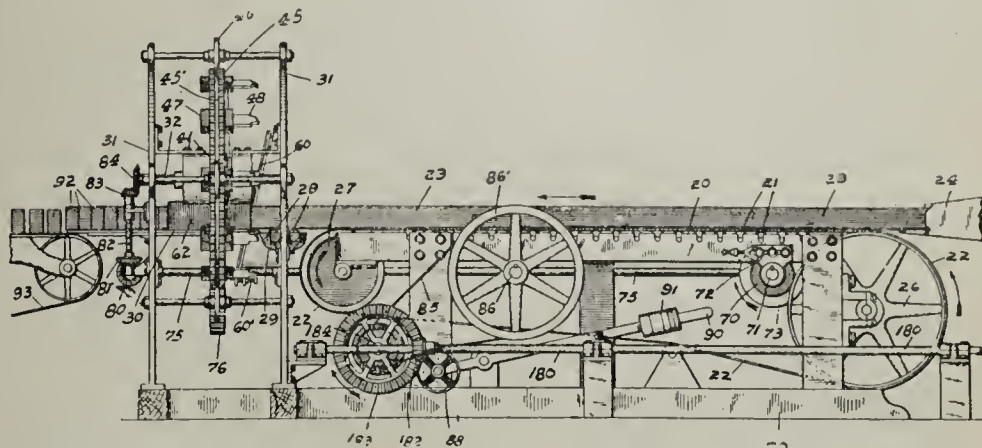
Claim—In apparatus of the character described, the combination of means for moistening lime, a rotatable vat into which the moistening means discharge, and plows or agitators for mixing the material in the vat while it is hydrated, substantially as described.



In apparatus of the character described; the combination of a mixing device, means for causing the material therein to overflow, a receiving-hopper receiving the material from said device, cooling-vats arranged to receive the material from said receiving-hopper, and divided chutes with valves controlling the delivery of material from the receiving-hopper to the cooling-vats, whereby the material may be fed into one of the cooling-vats while the material is cooling in the other, substantially as described.

845,872. Brick-Machine. Howard L. Hix, Frankfort, Ind. Filed Sept. 8, 1906. Serial No. 333,789.

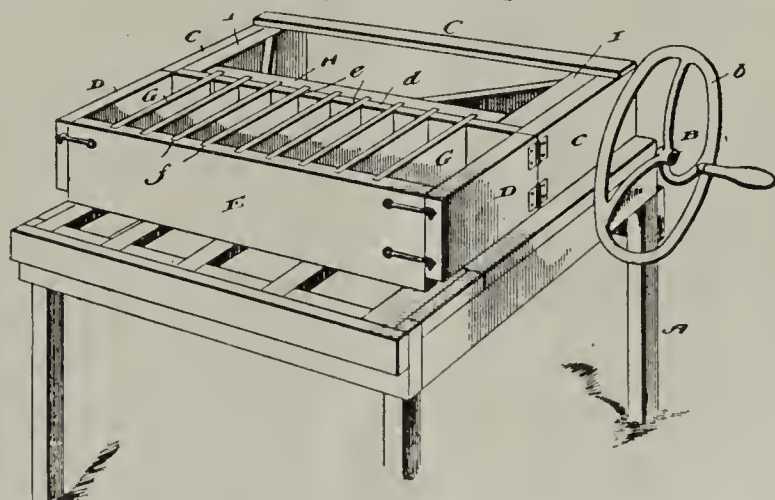
Claim—In a clay-cutter, the combination, with a receiver for a clay column, of cutting mechanism comprising a main rotatable body rotating in a plane fixed relative to the line of movement of the clay column, a cutter carried by said rotatable body, supporting means for said cutter permitting movement thereof longitudinally of the clay column, and means for positively moving said means in synchronism with the travel of the clay column during its



traverse through cutting position, a driving connection between the cutting mechanism consisting in part of an initial member engaged by the clay column near its initial end, a source of supplemental power, driving connections between said supplemental power and the cutting mechanism, a governor automatically preventing the application of an excess of supplemental power, and a pair of frictionally-engaging members forming a part of the driving connection between the cutting mechanism and the initial member engaged by the clay column.

847,120. Brick-Machine. Theodore Sederwall, Barry, Ill. Filed Jan. 7, 1907. Serial No. 351,240.

Claim—A brick-machine comprising a stand flat at its upper side, a body fixed on the upper side of the stand and having side walls and also having a forward wall in which at intervals of its length are vertical notches or kerfs, side walls hinged to and extending forward from the forward ends of the side walls of the body, a removable front wall arranged on the flat upper side of the stand and between the hinged side walls and having vertical grooves in its inner side, means for detachably connecting said front wall to the



hinged side walls, a removable pallet resting on the flat upper side of the stand and between the front wall of the body, the hinged side walls and the detachably-connected front wall, whereby when the front wall is removed and the hinged walls are swung outward, the pallet may be moved forward on the flat stand and removed therefrom, dividing-plates movable fore and aft in the vertical notches or kerfs of the body-wall, a bar connecting said dividing-plates at the rear thereof and having rearwardly-extending arms at its ends, racks on said arms, and a shaft journaled in bearings on the stand and having spur-gears intermeshed with said racks.

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No. 8

"I like to read American advertisements. They are in
themselves literature, and I can gauge the prosperity of the
country by their very appearance."—William E. Gladstone.

When times are dull and people are not advertising is the
very time that advertising should be the heaviest. Ninety-nine
out of every hundred merchants advertise most when there is
least need of it, instead of looking upon advertising as the pan-
acea for their business ills.—John Wanamaker.

Chronic kickers soon develop a whine that won't wear off.

Prosperity brings many friends, but hard luck separates
the wheat from the chaff.

Talk is cheap—except when a man's wife begins to ex-
plain why she needs the money.

A man doesn't mind getting the worst of it as much as
he dislikes seeing the other fellow get the best of it.

About the only difference between accepting a position
and securing a job is the matter of remuneration.

Some things come to those who wait, but the best things
come to those who are so busy hustling that they have no
time to wait.

How inconsistent your neighbors are! They refuse to
say that you are a good man, but after the undertaker gets
you they delight in saying that you were a good man.

Subscribe today for the CLAY RECORD and receive regu-
larly the only semi-monthly clay journal printed on this
side of the Pond. It costs only one dollar for the year and
keeps you posted. Can you afford to be without it for this
paltry sum? Send in the dollar today.

UNITED STATES OFFICIAL TIES UP FRENCH INDUSTRY.

Limoges, France, April 24.—By the report of a United States customs officer regarding the sale price of porcelain, the industry here is almost at a standstill. Several hundred men are out of employment because of the holding up of consignments by the custom officers at New York. There are from 300 to 400 cases of porcelain, exported by the Haviland, Martin, and Guerin companies, lying at New York.

The manufacturers assert that this resulted from a report of a United States treasury agent to the effect that the goods were being sold cheaper in the United States than in Europe.

They have furnished the facts to the United States consul here and appealed from the examiners to the board of appraisers.

Paris, April 26.—Former Minister Pichon today received the delegation of deputies and others representing the Limoges porcelain industry, who called to protest against the action of the United States customs authorities in refusing admission to consignments of Limoges porcelain owing to reports that the goods were wrongly invoiced, which created a crisis in the porcelain factories. After listening to the complaints of the delegates, the Minister forwarded instructions to Ambassador Jusserand at Washington, to lay the affair before the Washington authorities with the view of ending the difficulties.

Washington, April 26.—The dispatch from Paris stating that representatives of the Limoges porcelain industry had protested against the action of this government in refusing the admission of consignments of porcelain because of the report that they had been wrongly invoiced, was shown to the treasury officials today. Assistant Secretary Reynolds, in charge of customs matters, said that he knew of no refusal on the part of this government to receive invoices of Limoges porcelain on any account. The facts, it was stated, are that acting upon information in their possession, the appraising officers at New York raised the value of certain china importation from France. The importers appealed from this action to the Board of General Appraisers and the cases are now under consideration. The Treasury Department is expediting the final settlement of this matter in every way.

It is possible that some importers are not now making entries of French chinaware pending the determination of the question of value by the Board of General Appraisers, for, if the board should decide that the invoiced value was less than the real value of the merchandise, the importers would suffer from being compelled to pay additional duties.

EARNED SIXTY PERCENT ON CAPITAL STOCK

The Columbus, Ohio, Clay Products company, which is a reorganization of a Groveport brick company, will pay its first dividend some time during the coming year. Last year the company earned 60 per cent on its capital stock, but the surplus was put back to develop the business. It is probable that the declaration will be made in a few weeks.

OBITUARY

William A. Bryon, age 46 years, a prominent business man and general manager of the Edenburg Brick Works, died at his home in New Castle, Pa., after a six days' illness.

Stephen Bertler, 53 years of age, fell from the top of one of his kilns in his brick yard at Manitowoc, Wis., so injured him that he died after a two weeks' illness.

Major Henry R. Guss, the brick manufacturer at West Chester, Pa., died at his home in that city April 20th.

NEW YORK BRICK PRICES GO LOWER

The prices of brick in New York have dropped from \$6.25-\$6.50 per thousand since the river opened to \$5.25-\$5.75 at the present time. At these prices there is little or no money for manufacturers, under the existing schedule of costs for production.

BRICK AND CLAY RATES HIGHER.

Freight rates on brick and clay are to be raised approximately 10 per cent August 1. Announcement to this effect has been made in Cleveland. Every important railroad in the country is included in the agreement.

The boosting of rates on these commodities is in harmony with the recent action of the railroads in putting up rates on other commodities, some of which increases went into effect April 1 and the rest of which will become effective April 15. The railroads give as a reason for the higher rate that operating expenses are greater and passenger revenue less than formerly.

The postponing of the date on which the new rates will go into effect until August 1 is to the advantage of the shippers. Summer is the busiest season for brick shipments.

TO CURTAIL THE HUDSON RIVER PRODUCTION.

The course of action decided upon at the meeting of the Hudson River Association of Brick Manufacturers and Agents, which was held at The Palatine, was substantially the same as forecasted. The unprecedented condition of the brick market, with the price of brick lower than it has been in years, the demand abnormally small and a large supply on hand, were all carefully considered, and a discussion lasting over an hour and a half was indulged in as to the best course the members could pursue to have the market resume its normal tone.

The two methods of curtailment—that of beginning the season late and that of limiting the supply until normal conditions are again restored—were adopted by the association. The season will not open along the Hudson until May 13, at which time nearly all the yards will begin operations.

It was decided that the method of curtailing the supply during the season should be the closing of all of the yards one day a week. It is hoped by the manufacturers that these methods will soon raise the price of brick sufficiently to let them operate their plants at a profit, which they claim they cannot do with the price of brick as low as it is now.

ACCIDENTS, DAMAGES AND LOSSES

The Grand Jury at Toledo, Ohio, returned 75 indictments against wealthy and prominent manufacturers and dealers of building materials, including true bills against the leading brick manufacturers for violation of the anti-trust-law.

George S. Goodwin, president of the Goodwin Bros. Pottery Co., East Liverpool, Ohio, was struck by a bicycle ridden by a negro and seriously and possibly fatally injured. He was taken to a hospital where he is suffering of concussion of the brain.

John A. Mitchell and William Bullock, of Toronto, Ontario, are committed for trial on a charge of false pretenses preferred by J. L. Holmes, who paid \$2,000 to them for the Scientific System Brick Co., which was a failure.

In a suit of the Horton Mfg. Co., against Mayor Helmbold of Newport, Ky., a judgment was ordered for \$3,150 in favor of the plaintiff.

Four companies have asked the U. S. district court at Cleveland, Ohio, that the Eggers Brick Company be declared a bankrupt.

John H. Bentley has appealed his suit against the Kansas Buff Brick & Mfg. Co., Altoona, Kansas. He asks \$10,000 damages and the court granted him \$3,808. He was injured by an explosion of dynamite.

The Judge at Grand Rapids, Mich., took the case of Gertrude Retzema vs. the Valley City Brick Co. from the jury and held that the company was not responsible for negligence on the part of fellow-employees of the man who was killed.

John Law, the foreman, was crushed to death at the Humphrey Bros. Brick & Tile Works at Brooksville, Pa. At noon he crawled under the crusher to oil the journals and when they started up other employees were not aware of his position and started the machinery and killed him instantly.

FIRE! FIRE! FIRE!

Fire partly burned the plant of Reister Brothers at Washington, Ind.

Fire destroyed the greater part of the City Fire Proofing Co.'s Tile factory at 611 West 51st St., New York. The loss is estimated at \$50,000.

The plant of the Wilson Brick Co., owned by F. H. Wilson and F. N. Wilson at Wilson, Conn., was destroyed by fire causing a loss of \$2,500.

Fire caused by boys did damage to the plant of the American Brick Co., Pittsburg, Pa., at Blaine street. The loss is over \$1,000 and is covered by insurance.

Fire of unknown origin caused a loss of \$60,000 to the F. H. Wolf Brick Co.'s plant at Martin St. & M. C. Ry., Springwells, Detroit, Mich., partly covered by insurance.

Fire from an unknown cause did damage to the North Iowa Brick & Tile Co.'s plant at Mason City, Ia. The office and valuable records were burned. The plant is in course of construction.

Plant No. 1 of the Ittner Brick Co., at Belleville, Ills., was completely destroyed by fire, causing a loss of \$45,000 which is partly covered by insurance. Warren Ittner is the manager of the plant and the main office of the company is in St. Louis, Mo.

NOT ALWAYS HARMONY EVEN IN BRICK COMBINES.

There is an interesting sequel to the story of the indignation meeting held by the members of the Grand Forks, N. D., Builders' & Traders' exchange, on account of the alleged awarding of contracts for new University buildings to contractors outside of the state.

It has long been known that there exists a brick combine at Grand Forks and that the indignation aroused is really an internecine row among the brick manufacturers. One of the latter was selling no brick and he so informed the other who, by the way had friendly contractors who were buying their output, but the complaining brickmaker had not any such contractor. He was politely told to go and sell his bricks and he said he would.

Here is the sequel, the complaining brickmaker was influential in the circle of the board of trustees of the university and the upshot was that outside contractors were invited to bid on new university buildings and a Chicago contractor picked the plum and the complaining brickmaker sold his brick in stock and a lot more, hence the row in the Grand Forks builders' exchange, and outside the latter there is uncontrollable laughter going on among the friends of the man who was told to go and sell his brick. It seems to be a repetition of the old story at the Forks that, when they cannot eat up other people, they begin chewing off each other's ears.

WILL MAKE PRESSED BRICK.

The Pacific Face Brick Company has been organized in Portland, Oregon, and incorporation papers will be filed immediately with the Secretary of State. The incorporators are Jesse Edwards, of Newberg; C. E. Fuller, of Portland, and Dr. Andrew Kershaw, of Willamina. The company has a paid-up capital of \$150,000.

An election of officers for the new company resulted as follows: President, Jesse Edwards, of Newberg; vice-president, Dr. Andrew Kershaw, of Willamina; secretary, C. E. Fuller, Portland; treasurer and general manager, O. K. Edwards, of Newberg. The main office will be in Portland.

The company will take over the Edwards pressed brick plant at Newberg. The plant will be operated at Newberg until next fall, when the machinery and other accessories of the plant will be removed to Willamina, Yamhill County, where the fire clay is found from which the company will make its brick.

Dr. Kershaw, one of the incorporators, owns 400 acres of this clay at Willamina. Most of the capital stock subscribed by the incorporators will be used to equip the new plant at Willamina, and it is estimated that 100,000 brick will be turned out daily, employing as many as 100 men.

GRIFFITH & WEDGE COMPANY SHIPS POTTERY MACHINERY TO PETER NEILSON IN DENMARK.

The Griffith & Wedge company, of Zanesville, O., has just shipped to Middlefort, Denmark, a large consignment of pottery machinery which was ordered some time ago by Peter Neilson, formerly of this country, but now superintendent of a large pottery in Denmark.

THE SAN FRANCISCO CONTINUOUS KILN.

It has been reserved for a San Francisco, Cal., man to bring to practical perfection a continuous brick kiln that is worthy of special mention.

Mr. Wm. A. Butler, the inventor, is a son of the well-known pioneer California mason and builder, Thos. Butler.

Advantages claimed for this kiln are that it is the only continuous kiln having regenerative furnaces for burning bricks with crude oil or powdered coal.

This kiln has the greatest thermic efficiency, for the following reasons:

First, A perfect system of regulating the velocity of gases through the kiln.

Second, No excess of air, such as is required in up draft or down draft kilns.

Third, Perfect air recuperation.

Fourth, Perfect combustion.

Fifth, Loss by radiation reduced to a minimum.

Sixth, No cold air admitted with the fuel in the combustion chambers.

Seventh, Heat generated instantaneously.

Eighth, No delays, no waiting for the coal or other fuel to ignite, as in the ordinary continuous kiln.

Ninth, The burning bricks receive the full benefit of all the heat produced, as the combustion chambers are contiguous to the kiln.

Tenth, The amount of heat generated is at least 100 per cent greater than that produced by coal screenings dropped between the burning bricks in a given length of time, in the ordinary continuous kiln.

CONSTRUCTION.

This kiln can be built with 10 per cent less material than the ordinary continuous kiln.

The outside and inside walls, etc., are left down to a point four feet below the coal-floor line of the ordinary continuous kiln, the arch only being built above this line.

There are no Bags or Bag Walls to take down and rebuild when the kiln doors are opened and sealed up.

Has no complicated system of flues.

Has no complicated system of gas producers.

Can be arranged for utilizing the surplus heat with a blower, no chimney being required in this case.

This system applied to a Hoffman kiln will increase its capacity at least one hundred per cent.

William A. Butler, patentee of the kiln, can be addressed at 34 Parkside Avenue, San Francisco, Cal.

TWO BRICK FIRMS UNITE.

The Idaho Lime company and the Newport Brick & Lime company have consolidated under the name of the former company. The arrangement was recently completed, the stockholders in the Newport company being granted stock a trifle in excess of \$50,000 in the Idaho Lime company.

The Newport company had its establishment at Newport, Idaho, and was engaged in the manufacture of common and pressed brick. The Idaho Lime company has its works on the S. F. & N. and is engaged in the production of lime, pressed and repressed brick, and tiling. The enlarged company will now be able to handle a much larger business and will also be able to fill its orders more expeditiously.

A NEW COMPANY 'TO MAKE CEMENT BRICK MACHINERY

Practical brick men and financiers, headed by Joseph E. Kilby, of Cleveland, are incorporators of the Murdock Co., which will make a new cement and sand brick machine invented by Horace P. Murdock, of Detroit, Mich.

The making economically of a cement brick which shall have the same tensile strength as a pressed clay brick has been a problem ever since the boom in cement as a building material. Mr. Murdock has been at work on the problem for three and one-half years, and has been backed financially by the men now interested in the company. His machine makes forty-eight bricks at a time, giving it a capacity of 35,000 a day, while a portable power machine will be made for about 10,000 brick and a hand machine which will turn out 5,000.

The strong point of the apparatus is that it gets perfectly square corners and equal density throughout at high speed. In connection with the machine, Mr. Murdock has devised a cement mixer which obtains perfect mingling of wet cement and sand.

Offices and shops for making the lighter parts of the machines will be established at 672-4 Fort street west.

The officers of the company are: President, Joseph E. Kilby; vice-president, James G. Tucker; secretary, James M. Collins; treasurer, John I. Crissman. These, with John A. Gehring, O. M. Clark, Dr. George Cone and M. R. Bacon, comprise the board of directors. Mr. Kilby is vice-president and manager of the Kilby Manufacturing Co., of Cleveland, one of the largest makers of sugar beet machinery in the world. The company is capitalized at \$200,000, about one-third of it paid in.

RECENT SALES MADE BY THE "MARTIN" COMPANY

The Shull and Badger Brick Company, Butler, Pennsylvania, are also installing one of the new modern "Martin" Patent Compound Disintegrators, built by the Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pennsylvania.

The Fixico Mining Company, Fixico, Alabama, are putting in three of the "Martin Iron Base Crushers, furnished by the Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pennsylvania.

Mr. John Hurley, of Denver, Colorado, is at the present time installing a complete equipment of the "Martin" Horse-power Brick Machinery, bought from the Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pennsylvania.

The Delaware Terra Cotta Company, of Wilmington, Delaware, are equipping their plant with the latest improved "Martin" Patent System of handling and drying 40,000 stiff mud brick daily, being installed by the Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pennsylvania.

The Henry Martin Brick Machine Manufacturing Co., of Lancaster, Pennsylvania, are preparing for immediate shipment four of their Latest Improved Eccentric Pattern Rock and Ore Crushers, having a receiving opening of 15" x 20", and two of the largest sizes they build, viz, 16" x 24", for shipment to Salt Lake City, Utah.

POTTERY NEWS ITEMS

Money will do a great many things, but it will not remove the freckles from a man's conscience.

A. J. Swap has succeeded Mr. Williams as the manager of the Western Stoneware Co.'s plant at Clinton, Mo.

The Lowell (Ills.) Pottery Co., have built a new building for their machinery. The machinery is now being set up.

The Ozark Pottery Co., of St. Louis, Mo., has filed a statement to show its increase in capital stock from \$5,000 to \$25,000.

The Crooksville (O.) China Co. have decided to make some extensive additions to their plant, that when made will furnish employment to 250 persons.

The S. H. Brown Pottery Co., Roseville, Ohio, has been incorporated \$40,000 capital stock. S. H. Brown will be the superintendent of the new plant.

The Warren (O.) Pottery Co. is to be sold to pay the taxes, and a trust mortgage held by Geo. H. Tayler. The plant has not been operated for six years.

The Crabtree Ceramic Art Co., Syracuse, N. Y., has been incorporated with \$75,000 capital stock by Louis Crabtree, C. Avirell and S. C. Hunter, directors.

It is the intention of the Imperial Porcelain Co., Trenton, N. J., to erect a new plant to cost \$25,000, besides running their present plant in the East Trenton pottery.

The Receivers of the Bell Pottery Co., Columbus, Ohio, have filed application asking for the sale of the property, as there are no funds with which to conduct the business.

The board of directors of the Dover (N. H.) Brick & Pottery Co., recently held a meeting to further the plans for a pottery on Cocheco street. Mr. Morris will be the manager.

The Western Stoneware Co., Monmouth, Ills., will build an additional factory at Macomb, Ill., that will cost in the neighborhood of \$20,000. W. D. Brereton is president of the company.

The American Mutual Pottery Co., Columbus, Ohio, has been incorporated with \$100,000 capital stock and have purchased the partly destroyed pottery plant at Chaseland formerly owned by the Columbus Pottery Co.

The West Virginia Pottery Co. of Bridgeport, W. Va., has been incorporated with \$12,000 capital stock. The incorporators are V. L. Highland, S. S. Faris, N. M. Jones, J. D. Lawson, C. H. Warner and Gordon B. Late.

The Ouachita Pottery Co., of St. Louis, Mo., of which R. S. Bradford is president, has purchased large holdings at Versailles, Mo., which contain large deposits of fine clay. They will build a factory to employ 1,000 men. The capital stock is \$3,000,000.

The Weir Pottery Co., Monmouth, Ills., has brought action against the Western Stoneware Co., to foreclose the sale of \$122,000 of stock and bonds and the delivering of \$194,000 of preferred stock in the Western Stoneware Co. The Weir plant was taken over by the Western Stoneware Co. a year ago.

The Perrysville (Ohio) Pottery Co., has been incorporated with \$25,000 capital stock. The new plant costing \$15,000 will be located on the Byers farm. S. Jenks, of Steubenville, has taken stock in the company and will manage it. The incorporators are A. Shambaugh, D. Hunter, H. A. Galligher, C. L. Carey and A. T. Zimmerman.

SAND OR LIME BRICK OR BLOCK NEWS

The Nooksack, (Wash.) Miracle Stone & Brick Co., has been organized to make concrete brick, tile and blocks.

Isidor Kaunitz and M. H. Avram will organize a company to manufacture brick by a new process at Ybor City, Fla.

The Cincinnati, (O.) Concrete Pressed Brick Co., has been incorporated with \$100,000 capital stock, by J. K. Long and others.

The Alleghany Facing Brick & Concrete Co. has located their plant at Belmont, N. Y., and will have same in operation within sixty days.

The North St. Joseph, (Mo.) Concrete Post & Brick Co., has been organized with \$5,000 capital stock, by William Ozenberger, J. S. Ozenberger, Ernest Batcheler and Fred. Ozenberger.

The Silica Brick Co., Tampa, Fla., has purchased the sand-lime brick plant at Varico and will operate same, Elmer Webb as general manager, L. W. Smith and C. C. Warren are also interested.

The Southern Engineering & Contracting Co., Little Rock, Ark., will erect a sand-lime brick plant and wants prices on such machinery. M. Roberts is president and G. W. Hershman, secretary and treasurer.

The Composite Brick Co., Sellwood station, Portland, Oregon, has been reorganized and the plant will be overhauled. R. R. Grabell is president; J. J. Reed, vice-president; F. L. Mills, secretary and treasurer.

A certificate of incorporation has been granted to the Granite Brick Co., Waterbury, Ct., with \$50,000 capital stock. Incorporators are W. L. Hall, N. G. Morse, Ralph N. Blakeslee, Wilson Tuttle and F. M. Peasley.

The Louisiana Concrete Brick & Tile Co., Shreveport, La., has been incorporated with \$30,000 capital stock, officers, L. W. Huckins, president; C. W. King, vice-president; G. M. Leadman, secretary and treasurer.

The Branditold Manufacturing & Construction Co., Roswell, N. M., has been incorporated with \$60,000 capital stock. The incorporators are Charles W. Jones, G. A. Richardson, C. H. Jones and Howard M. Jones all of Roswell.

The Watertown (S. Dak.) Pressed Brick Co. has been incorporated with \$50,000 capital stock. The officers are Dr. E. F. Harrington, president, H. E. Dickinson, vice president, C. S. Schalke, secretary, Dr. H. M. Finnerud, treasurer, Edward Johnson, superintendent.

The Egyptian Monolithic Stone Co, of America, has been organized at Brooklyn, N. Y., to manufacture brick and stone, capital stock \$10,000. Incorporators are W. C. Owen and W. C. Owen, Jr., 271 Winthrop St., Wm. A. Smith & James G. Handford, 17 No. First St., Jamaica, N. Y.

The Belt Line Brick Co. has been organized at Minneapolis, Minn., with \$150,000 capital stock. They will build a \$40,000 sand lime brick plant in the belt line, between Minneapolis and St. Paul. The plant is expected to be in operation in June. H. E. Fletcher is president, W. B. Chandler vice president, and Charles Morse treasurer.

MISCELLANEOUS ITEMS

S. Z. Brannan, of McDade, Texas, wants prices on brick-making machinery.

H. P. Jacobsen, Mt. Pleasant, Utah, has ordered machinery and will put in a modern brick plant.

L. D. Hill has purchased a one-half interest in the Milton Center (Ohio) Tile Works and will help operate same.

George Stetters will build a \$35,000 brick plant on Berry avenue, at Bellevue, Ohio. He will make pressed brick.

Mason City capitalists have secured options on land at Sheffield, Iowa, and will build a \$50,000 brick and tile manufacturing plant.

The Garrison (Ia.) Brick & Tile Co. has secured the contract for 400,000 sewer brick for the new sewers to be built at Cedar Falls this summer.

The Stovall (N. C.) Brick Co. is in the market for a 25,000 capacity brick plant, including pug mill, brick machine, automatic cutters, trucks, cars, etc.

The Nebo (Ky.) Brick & Tile Co. has been incorporated with \$35,000 capital stock. The incorporators are, C. N. Ferguson, W. T. King, and R. S. Walker.

O. J. McLane and C. J. Connelly, of Carthage, Mo., are contemplating the starting of a brick works at Shreveport, La. J. B. Atkins will be associated with them.

P. B. Exelby, of Neodesha, Kansas, chemist and J. W. Pratt, engineer, located the site for the Chanute (Kansas) Cement & Clay Products Co.'s cement plant.

The Queen City Brick & Stone Co., Winooski, Vt., has been incorporated with \$10,000 capital stock. The company will have plants in Burlington and Colchester.

The H. H. Piatt Brick & Lumber Co., Carrier Mills, Ills., has been organized with \$25,000 capital stock. Incorporators are H. H. Piatt, A. V. Fuller and H. Thompson.

William Conway, Fifty-eighth and Walnut streets, Philadelphia, Pa., has contracted with John Atkinson to build a kiln at his brick yard that will be 34x216 feet long.

H. E. Ogden & Son Co., 525 Main St., East Orange, N. J., has been incorporated with \$100,000 capital stock. Incorporators are, Charles O. Geyer, Frank C. Ferguson, and A. W. Condt.

The Hahne-Brunkhorst Co., Chicago, Ills., has been incorporated with \$60,000 capital stock to make brick in Cook County. Incorporators are, E. C. Hahne, Alfred Brunkhorst and F. Tegtmeier.

The Southern Clay Products Co., Chattanooga, Tenn., has been incorporated with \$250,000 capital stock. The incorporators are, S. B. Smith, W. M. Elliott, A. T. Moore, T. F. King, and A. S. Caldwell.

Over 200 employees of the Sayre & Fisher at Sayreville, N. J., went on a strike April 2, for more pay. The company employ 1,000 men. They returned to work later on an increase of 15 cents a day, making \$1.50 a day.

The Buffalo Center (Iowa) Tile & Brick Co. has reorganized with additional capital and will enlarge the plant. M. O. Skuttle is president; A. C. Olsen, vice president; I. H. Shoemaker, secretary; C. W. Gedde, treasurer; E. D. Buckman, manager.

Work on the new plant of the Harbison-Walker Refractories Co., Indiana Harbor, Ind. has been started and the company intend to take care of their Western trade.

C. A. Morley & Co., Jamestown, N. Y., are improving their Levant Brick Works so that they can take care of their orders.

The Amite (La.) City Bank has sold the Amite Brick & Tile Company to William Empson, of Clinton, La., consideration \$8,000.

The 250 employees of the W. S. Dickey Clay Mfg. Co., at Deep Water, Wis., went on a strike for 2½ cents an hour raise in wages, which has steadily been denied them.

The Enterprise Brick Co., Mountain View, N. J., has been incorporated with \$10,000 capital stock. Incorporators are, William F. Hosier, Lusie Hosier and George W. O'Connor.

L. D., H. H., W. H. and F. L. Cobb will build a 20,000 capacity pressed brick plant at Fort Worth, Texas. The plant will be started at once on a site near Tyler's Lake on the T. & G. N. Ry.

The Council Bluffs (Iowa) Brick Co. has been incorporated with \$50,000 capital stock, by E. E. Hart, E. A. Wickham, and William Arnd. The Weaver Brick Works were purchased by them.

The Harbison-Walker Refractories Co., Pittsburgh, Pa., capital stock, \$27,600,000, has incorporated in Indiana, with \$95,433 capital stock, W. D. Van Horne, agent, Indiana Harbor, Ind. They will build a large fire brick works, using Wisconsin ganister rock.

The Bessemer Brick Co., Youngstown, O., has commenced the erection of a 50,000 daily capacity brick plant at Bessemer, Pa.

R. F. Smith, Belle Plaine, Iowa, will add the making of drain tile and pressed brick to his brick-making plant and has already ordered machinery for this purpose.

Ross Bros., Lumsden, Sask, have been testing their clay with a view of starting a plant. They want tests made by all processes so as to see which it is best adapted for.

A. P. Dyke, Hope, Ark., is offering splendid inducements for a pressed brick and drain tile plant for that place. Read what he has to say about it on page 40 and write to him.

The plants of the Idaho Lime Co. on the S. F. & N. Ry. and the Newport (Idaho) Brick & Lime Co., both operating brick and lime works, are consolidated under the name of the former and will enlarge the plants.

At a special meeting of the Utica (N. Y.) Pressed Brick Co. the main office was changed from New York City to Utica. John E. Hardman of Montreal, Quebec, is president of the company and Clarence O. Putman of Utica, secretary. The plant will be started up and it is the intentions of the company to enlarge.

Charles Franklin Lauer has taken an interest in the American Clay Products Co., Chicago, of which Martin W. Lauer is the president. For some years he will not take an active interest in the management of the company affairs. Mr. Lauer says "he has five toes on each foot and screams loudly when in want of something to eat."

The New San Francisco Continuous Kiln

is the only CONTINUOUS KILN having regenerative furnaces for burning bricks with CRUDE OIL or POWDERED COAL

This kiln has the greatest thermic efficiency, for the following reasons:

FIRST—A perfect system of regulating the velocity of gases through the kiln.

SECOND—No excess of air, such as is required in UP-DRAFT or DOWN-DRAFT kilns.

THIRD—Perfect air recuperation.

FOURTH—Perfect combustion.

FIFTH—Loss by radiation reduced to a minimum.

SIXTH—No cold air admitted with the fuel in the combustion chambers.

SEVENTH—Heat generated instantaneously.

EIGHTH—No delays, no waiting for the coal or other fuel to ignite, as in the ordinary continuous kiln.

NINTH—The burning bricks receive the full benefit of all the heat produced, as the combustion chambers are contiguous to the kiln.

TENTH—The amount of heat generated is at least 100% greater than that produced by coal screenings dropped between the burning bricks in a given length of time, in the ordinary continuous kiln.

CONSTRUCTION

This kiln can be constructed with 10% less material than the ordinary continuous kiln.

The outside and inside walls, etc., are left down to a point four feet below the coal-floor line of the ordinary continuous kiln, the arch only being built above this line.

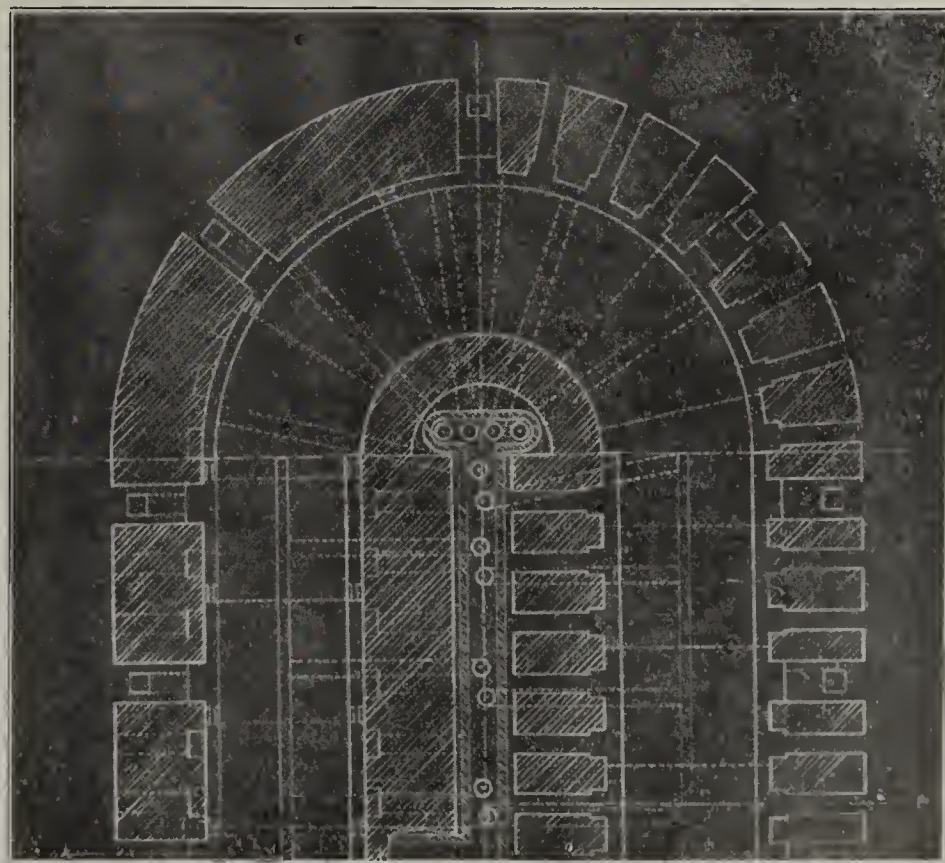
There are no BAGS or BAG WALLS to take down and rebuild when the kiln doors are opened and sealed up.

Has no complicated system of flues.

Has no complicated system of GAS PRODUCERS.

Can be arranged for utilizing the surplus heat with a blower, no chimney being required in this case.

This system applied to a HOFFMAN KILN will increase its capacity at least 100 per cent.



WILLIAM A. BUTLER, Patentee, 34 Parkside Ave. San Francisco, Cal.

A paving brick factory is to be started at Petersburg, Ills. Edward D. Roberts will build a pressed brick works at La Grange, Ga.

Daniel Coble will erect a steam brick manufacturing plant at Ellensburg, Wash.

The St. Louis (Mo.) Vitrified Brick Co. has purchased 35 acres of land adjoining its plant at Clayton, paying \$16,591 for same.

George Bosney, proprietor of the Leesville, (La.) brick works is now making improvements to enlarge his plant. They are now turning out 45,000 brick daily.

The Wyoming Brick & Con. Co., Lander, Wyoming, have placed their brick machinery and are now ready for operation. Adam Griesemer of Pueblo, Colo., is the manager.

The plant of the Muskogee (I. Ter.) Vitrified Brick Co. is to be doubled in size and capacity so as to take care of the great demand for their brick both common and paving brick.

The Chicago Retort & Fire Brick Co. have started to build their new fire brick plant at Ottawa, Ills., which was recently destroyed by fire. New engines, boilers, kilns and a modern dryer will be installed.

The Hamburger Realty & Trust Co., Los Angeles, Cali., has gone into the brick business and will soon have a plant to turn out brick. They will require 7,000,000 brick for their own buildings. The plant is west of Schuetzen Park. The brick will be hauled on an auto truck from the kilns to the jobs.

A. C. Huggenberger, of Tallula, Ills., is looking after a location for a drain tile plant, and has had under consideration Vandalia, Mo.

The Hastings (Nebr.) Pressed Brick Co. have resumed operations and have ordered a new press so as to increase the capacity. A. M. Baugh is the manager.

The plant of the Griffin (Ga.) Brick Co. has been installed and is about ready to be started. 100,000 common brick and 40,000 pressed brick are made daily.

T. H. Spencer and E. T. Simmons of Corning, Ark., have completed arrangements for a brick works on the farm of E. K. Williams, at Walter, Okla., 30,000 brick will be made daily.

The United States Portland Cement Co. has been incorporated with \$900,000 capital stock by J. M. Yost, Henry Schwaller, and J. H. Ward of Hays City, Kansas, Ira E. Lloyd, of Ellsworth and E. Haworth of Lawrence.

The Badger Portland Cement Co. has been organized with \$1,000,000 capital stock and will build a portland cement plant near Sturgeon Bay, Wis., E. A. Edmunds, of Rhinelander, is the president; John McNaughton, of Appleton, vice-president; C. G. Cannon, of Appleton, treasurer, and C. C. Wayland, of Portage, secretary.

The Pacific Face Brick Co., Portland, Oregon, has been incorporated with \$150,000 capital stock and will take over the Edwards Pressed Brick Works at Newberg, Oregon. The officers are, Jesse Edwards, president; Andrew Kershaw, vice-president; C. E. Fuller, treasurer, and O. K. Edwards, manager.

Defy Competition

The Ideal Concrete Machine for the manufacture of Concrete Building Blocks makes it possible to profitably undersell all other building materials in all localities.

Ideal Blocks can be sold far below the cost of brick, lumber or natural stone. Excell them all in durability and fire and weather proof qualities. Adaptable to any possible architectural design.

IDEAL CONCRETE MACHINERY

Wonderfully simple in construction. No chains, springs or gears. Embody the only principle (face down) permitting the practical use of rich facing material with less expensive material in back of blocks. Adaptable to any size block within capacity.



The same machine makes blocks in countless ornamental designs and natural stone effects.

Write and learn how easy, rapidly and profitably one man can turn out Concrete Building Blocks with an Ideal machine.

Ideal Concrete Machinery Co.
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South Bend, Ind.
Mussens Limited,
Montreal, Sole
Agents for Canada.

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**BANK SAND
GLASS SAND
ROCK, CLAY
COAL, ETC.**

All Mineral, Animal and Vegetable Matter.

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue W. C.

American Process Co.,
62-64 William St. NEW YORK CITY

Mississippi capitalists are figuring on starting a drain tile plant at Helena, Arkansas.

The Rushville (Ind.) Brick Co. has been incorporated with \$25,000 capital stock by Fred Clevenger, J. E. Oglesby, E. Price and J. H. Kiplinger.

The brick plant of the Sherbrooke Gas & Oil Co., Le Roy, Kansas, is being pushed to completion and Le Roy will soon supply vitrified paving brick.

The Northern Pressed Brick Co., Crookston, Minn., are installing a sand-mold soft mud brick outfit at their plant beside erecting several additional kilns.

The Lindale (Texas) Brick Co. has been incorporated with \$400,000 capital stock. Incorporators are, Robert Clark, Robert Clark, Jr., and Kelly Nowlin.

The American Brick & Tile Co., Mason City, Iowa, have increased their capital stock from \$50,000 to \$200,000 to meet the demands of their new plant which is now in course of construction.

The Clymer Brick & Tile Clay Co., Indiana, Pa., has been incorporated with \$80,000 capital stock. Incorporators are, Robt. M. Wilson, J. S. Fisher, S. N. Langham, Henry Hall, and E. F. Lenherd.

H. D. Hadley, of Terre Haute, Ind., proprietor of the Northwest coal mine at Jasonville, Ind., is making arrangements to start a brick works near the mine, using the shale taken out for vitrified brick, etc.

Daniel C. Lyle will establish a brick manufacturing plant at East Point, Ga.

D. W. Radichel of Lake Crystal, Minn., has purchased land of J. C. Chapman at Garden City and is erecting a tile factory.

The Gladding-McBean Co., Lincoln, Cali., has purchased ten new tank cars to be used in shipping oil to run their big plant.

Boardman & Tiffney have purchased the Van Gundy Brick Works at Provo, Utah, and will consolidate same with their plant.

The Diamond Brick Co. of Black Diamond, Cali., has been incorporated with \$50,000 capital stock. C. A. Hooper, Sumner Crosby and W. E. Reed are stockholders.

Henry Lewis has purchased the Cahoon interest in the Giant Clay Beds near Five-mile-pass which puts the control of these beds in the hands of Lehi, Utah, people.

The Lyth Tile Company, Buffalo, N. Y., has been incorporated with \$100,000 capital stock to manufacture sewer pipe, etc. The company consists of Albert Lyth, Albert L. Lyth and Byron L. Lyth. They take over and continue the business of John Lyth & Sons.

Warden McCloughry of the Federal prison at Leavenworth, Kansas, says that it is strongly possible that one of the bids for installing a paving brick plant at the federal penitentiary will be accepted and that the prisoners will be put to work making paving brick. F. E. Harris is superintendent of construction.

The Ideal Brick Kiln

SHOULD BE

Cheap and durable and have a big daily capacity.

In order to save fuel it should be of the continuous type.

To produce clean colored bricks without cracks, the preliminary drying should be performed in chambers separated from the burning compartment proper, according to the principle of the common up-draft kiln.

The heat from the already burned cooling bricks should preferably be used to lighten the burning proper.

The different stages of the burning process should always be easily observable. Such one is the

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Dr. HERMAN RABERGH

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FOR SALE

One 40 h.p. gasoline engine, one semi-automatic side cut brick cutter, Wallace Mfg. Co. make. One disintegrator and dump table made by Horton Mfg. Co.; 75 good brick moulds, also trucks and wheelbarrows. All in good condition. Address
W. H. VANDER HAYDEN,
Ionia, Mich.

BRICK AND TILE MACHINERY AT SACRIFICE

Where a country is tiled, factories are offered complete, or in part, Cheap Have several Brewer Mills for sale, and others.
Engines, Boilers, Crushers, Drying Pipes, etc. If you wish to buy or sell write
Brick and Tile Machinery
Secor, Ill.

A GOOD LOCATION FOR PLANT

New Athens offers an exceptionally good location for a large Dry Press brick yard. Only 28 miles from East St. Louis, where the entire product can be marketed. For particulars address,
BUSINESS MEN'S LEAGUE,
New Athens, Ill.

STEAM SHOVEL WANTED

A second-hand Steam Shovel, small or medium capacity, in good condition, is wanted by
STRAIGHT BROS. CO.
Fonda, Iowa

BRICK YARD FOR SALE

Good clay, good down draft Kilns; plenty of water; good local demand; good shipping facilities. Address:
STATE BANK OF HAMILTON,
Hamilton, Illinois.

FOR SALE

Modern Soft Mud Plant, city 12,000, good business, good prices, abundance of clay and sand. Address,
WM. M. REED,
Princeton, Ind.

FOR SALE CHEAP

Two American Clay Machinery Company's No. 23 combined brick machines, with repair parts sufficient to make machine first-class. Capacity 7500 to 10000 per hour. Greatest bargain. Write for particulars.
GREAT EASTERN CLAY CO.
39 Cortland St., New York.

FOR SALE

One Chambers pug mill, practically new, sufficiently large for any output. A first class machine in every respect. Address
ALONZO CURTIS BRICK CO.,
Grant Park, Ills.

MACHINERY FOR SALE

The following machinery not used by us but all in good condition, will be sold at very reasonable prices.
One Penfield Single Mould Power Re-Press, capacity 10,000 a day.
Two Fate Company Bensing Automatic Side cutting tables. American Enameled Brick & Tile Co.
1 Madison Ave., New York.

FOR SALE

One Freese Combination Brick Machine, capacity 20,000 to 30,000 per day. Hand cutting table and winding drum. Excellent condition and only run four months. Good reason for selling.
Address S. Care CLAY RECORD, Chicago, Ill.

FOR SALE

One Second hand Four Mould Dry Press, in good order. One of the best presses on the market. Answer quick if you want it.
Address G. care Clay Record
Chicago, Ill.

FOR SALE

Two complete sets brick making machinery, including Chambers brick machines, elevators, clay rolls, granulators, hoists, etc.
ILLINOIS BRICK CO.,
Chicago, Ill.

FOR SALE

For Sale—75 Acres; 60 feet of Shale.
10 feet of Fire Clay, 3 feet of Coal developed.
Excellent conditions Railroad track.
Price, \$15,000. Address.
NEW CENTRAL COAL CO.
Terre Haute, Ind.

ENGINES AND BOILERS

Corlis engines, 20x48, 18x36, 16x42, 12x36. Also 40 other sizes and styles in stock.
Boilers, Tubular, 84x18, 78x16, 72x18. Also 60 other styles and sizes in stock.
Send specifications of your requirements and we will make you a proposition that will interest you.
THE RANDLE MACHINERY CO.
1732 Powers St., Cincinnati, Ohio.

A COMPLETE BRICK-MAKING OUTFIT FOR SALE CHEAP

We are consolidating our paving brick plants. This throws out of use.
One Center Crank, 100 horse power Engine.
Two Boilers, 50 horse power each.
One Feed Pump.
One eight foot Frost Dry Pan, wood frame,
One Elevator. One Pug Mill.
One Augur Machine, 50,000 capacity.
One Freese Automatic Cutter.
Shafting, Pulleys and Belting. All in good working order and valued at over \$5000. Will sell same cheap. Immediately delivery
STREATOR PAVING BRICK CO.
Streator, Illinois

FOR SALE.



Right and left-hand One, Two and Three Way Switches, of various gauges, radius and weight rail, at special prices.
THE ATLAS OAR & MFG. CO.,
Cleveland, Ohio.

FOR SALE—CHEAP—New and re-laying rails, 12, 16, 20 and 25 pound. For prices, address
ATLAS OAR & MFG. CO.,
Cleveland, Ohio.

BRIGHT YOUNG MEN WANTED

Can make a profit of \$175 to \$200 per month without investing any money.

Address: H. A. LINAWEAVER
552 Wabash Avenue
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FOR SALE OR EXCHANGE

45 ton, 1½ yard Vulcan Steam Shovel in first class condition. Price \$3500.
One No. 2 Giant Brick Machine, made by the American Clay Machinery Co.
One large sized Granulator.
One set of Large Sized Rolls.
Fifty double deck Brick Cars.
Large quantity of rails and steam pipe.
STEGER BRICK CO.
Suite 306. 145 La Salle St., Chicago, Ill.

PARTNER WANTED

A good, reliable man of experience, with some capital to invest in and take charge of a new Dry Press Brick Plant. Plenty of shale, and good market for all the brick. Address
DENIS, care Clay Record,
Chicago, Ill.

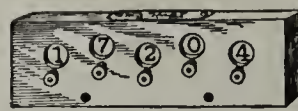
FOR SALE

We offer for sale at a sacrifice the following BOYD Presses:

One 3 Mold Standard 1891 Pattern
Two 4 Mold Standard 1897 Pattern

All in good condition. Inspection invited. Immediate shipment.

Harrison-Walker Refractories Co.,
Farmers Bank Building,
Pittsburgh, Pa.



No better made, cut from \$8 and \$10, to 4 Wheel, \$3.00 5 Wheel, \$3.25 Guaranteed. Sold by all dealers
Paper Joggers quoted.
R. A. HART, 41 White St., BATTLE CREEK, MICH

MEN WANTED

Six men experienced in Hollow block manufacturing, highest wages; no labor trouble. Apply to 605 Diamond Bank Building | Ohio Clay Products Co
Pittsburg, Pa. Salineville, Ohio.

FOR SALE OR TRADE.

Two Brick and Tile Plants in Iowa and Illinois, now running. Address,
THE KILN DOCTOR,
514 Fourth Street, Dayton, Ohio.

FOR SALE

A good Road Machinery Co.'s make, No. 4 Champion Crusher, in perfect condition; very little used; no reasonable offer refused.
OHIO CLAY PRODUCTS CO.
605 Diamond Bank Bldg.,
Pittsburg, Pa.

Good Opportuniest

Pressed Brick

Hope, Arkansas now has four railroads with two others making surveys, everything moving steadily upward. Fine climate, water, churches and schools; 4,000 inhabitants, etc.

1st—Fine clay on I.M. & S. Ry., abundant and cheap, one mile from corporation; will make finest of pressed brick, and I have samples of brick to show you now. Two parties (one of experience will invest a few thousand dollars and manage the plant if agreeable; he lately made the samples referred to.) More capital is wanted to establish a \$25,000 plant. Good market and good price.

2nd—Good white fire clay about three miles from railroad.

3rd—Tiling, flower pot, hanging baskets and all such clays to be had five miles from Hope, at low figures, but the pressed brick plant is the thing now.

4th—Good chance for one with experience and capital to establish a cement building block plant and do this line of work, as well as general cement work, here and at many points around Hope.

5th.—We have asphaltum and other oil and gas indications near Hope; come and I will show you something and give you leases free to test.

6th.—Many chances here to make money in town property; also in fruit, truck and general farm lands. Come and investigate. See Bradstreet and Dun. Write our Banks as to myself. Address A. P. DYKE, Hope, Ark.

STONE MAKING MONEY MAKING

By the PETTYJOHN System
More Pettyjohn Concrete Block Machines in use than any other—there's a reason. Machines from \$35 to \$275. Guaranteed in every way and shipped on trial anywhere. Let us tell you how to start a Stone-Making-Money-Making factory in YOUR town. Our catalog of concrete facts is free.



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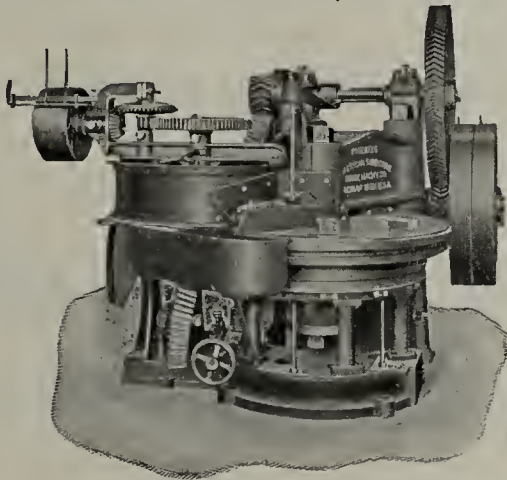
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INCORPORATED APRIL, 1902
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Improved Komnick Rotary Presses

Are now being built with extra table for making fancy brick, on which double pressure is exerted.

Don't confuse our Practical System with the so-called Scientific Systems. We have the Practical System, the Practical Machinery, the Practical Press, the Practical Hydration and the Practical Outfit, which is Manufactured in our own Shops, under the supervision of Practical Men with Practical Experience.

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We Produce Results, because we are the Oldest Practical Sand-Lime Engineering Company Doing Business in the United States, and we defy contradiction.

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A Manual for all Engaged in the
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Manufacturers of Plain and Fancy
Brick, Cement Brick and Blocks

H. W. COSBY, Superintendent and General Manager.

South Boston, Va., January 19, 1907.

Marion Machine, Foundry and Supply Co.,
Marion, Ind.

Gentlemen:—

As regards the Rust Clay Feeder we bought of you last year, will say it has been in use in our branch yard at Houston, Va., since last July and is giving PERFECT SATISFACTION. It practically saves us two men besides doing the work BETTER and with REGULARITY.

The greatest trouble brick men have is getting hands to feed regularly—they will over feed and choke the machine break or run belts off and then sit down and rest while the owner labors to repair and start up again. Your Clay Feeder is perfect and is indispensable to any brick manufacturer who wishes to make a good brick at lowest cost.

Yours truly,

Signed by H. W. COSBY, Supt. and Gen. Mgr.

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Marion, Ind.

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A Fine Opportunity

On or prior to January 1st., 1908, we shall discontinue the manufacture of Brick Machines and brick yard supplies. We offer for sale at any fair bid our business, good will, patterns, supplies and stock on hand. Our old reliable Machines are sold throughout the entire United States without expense to us and any one who engages in manufacturing can increase their sale largely by slight effort. These Machines have been made in this factory for thirty years.

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WHY MAKE YOUR OWN BRICK CUTTING WIRES

When You Can Buy Ready Made Cheaper?

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FOR ALL USES.

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60-70% 70-80% 80-90% OXIDE.

CLAY WORKERS' GOODS A SPECIALTY.

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Do Your Brick Turn White?

HERE IS THE REMEDY.
PRECIPITATED

Carbonate



of Barytes

The only preventative for scum and discoloration on facing Brick and Terra Cotta; neutralizing the Sulphate of Lime in the Clay and Water.

Circulars and Particulars on Application.

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Something New In Brick Kilns and Dryers



The Dennis Double Chamber Up and Down Draft Brick Kilns and Direct Heat and Hot Air Brick Dryers show many new features that make them superior to all others. Economical, durable and strong in construction and operation, having many points of advantage that appeal to practical brick-makers. Patented April 14, 1903 and September 8, 1903. Brick plants installed and put in operation. Write for booklet. Correspondence solicited.

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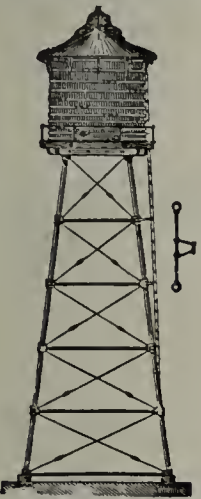
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Is a source of annoyance and danger. It is liable to rot and collapse at any time. A

CALDWELL STEEL TOWER

is safe, staunch and durable and will carry four times the weight of the filled tank. Expensive labor is not necessary to erect these outfits, your own men can do it. We furnish all plans.

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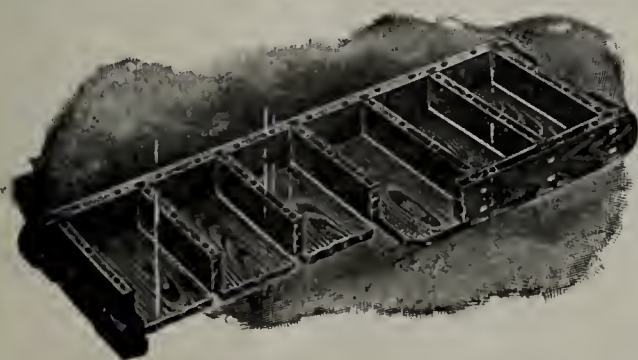
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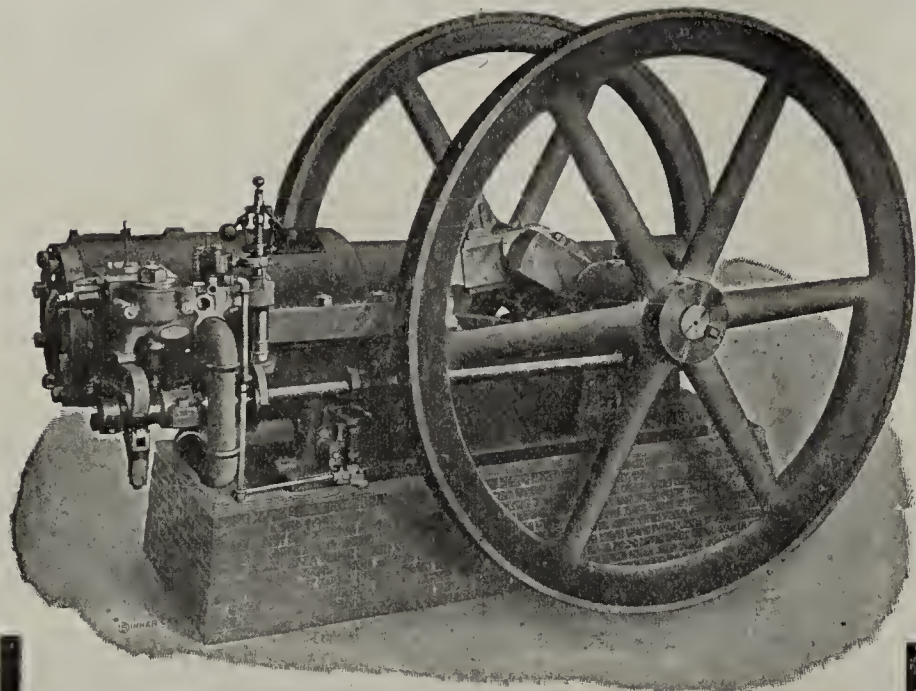
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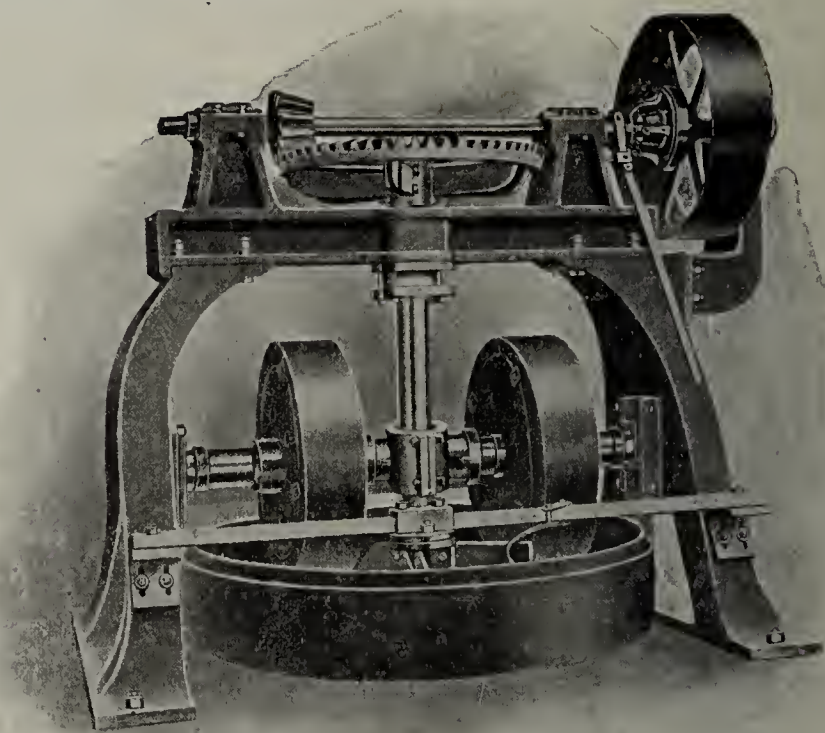


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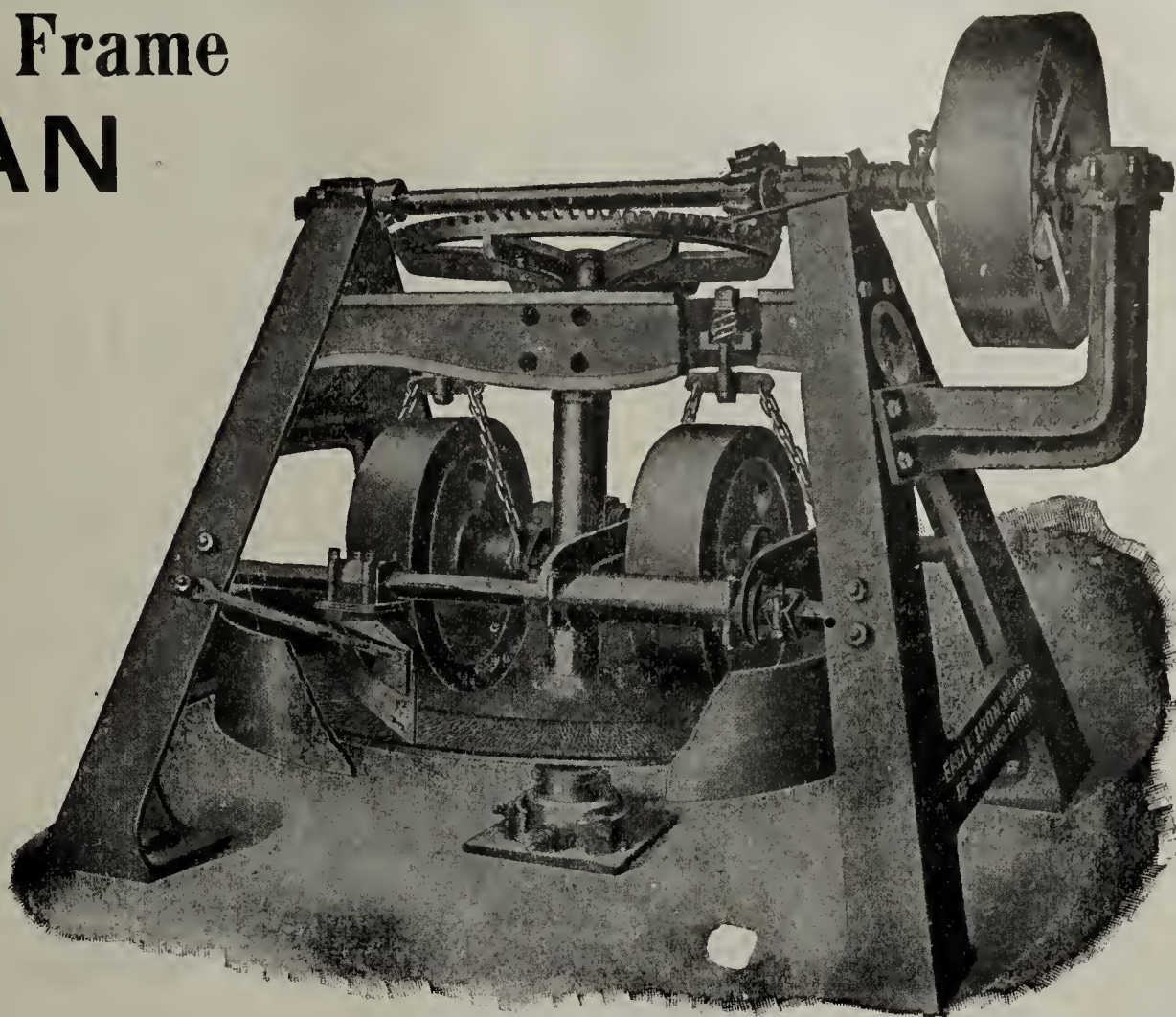
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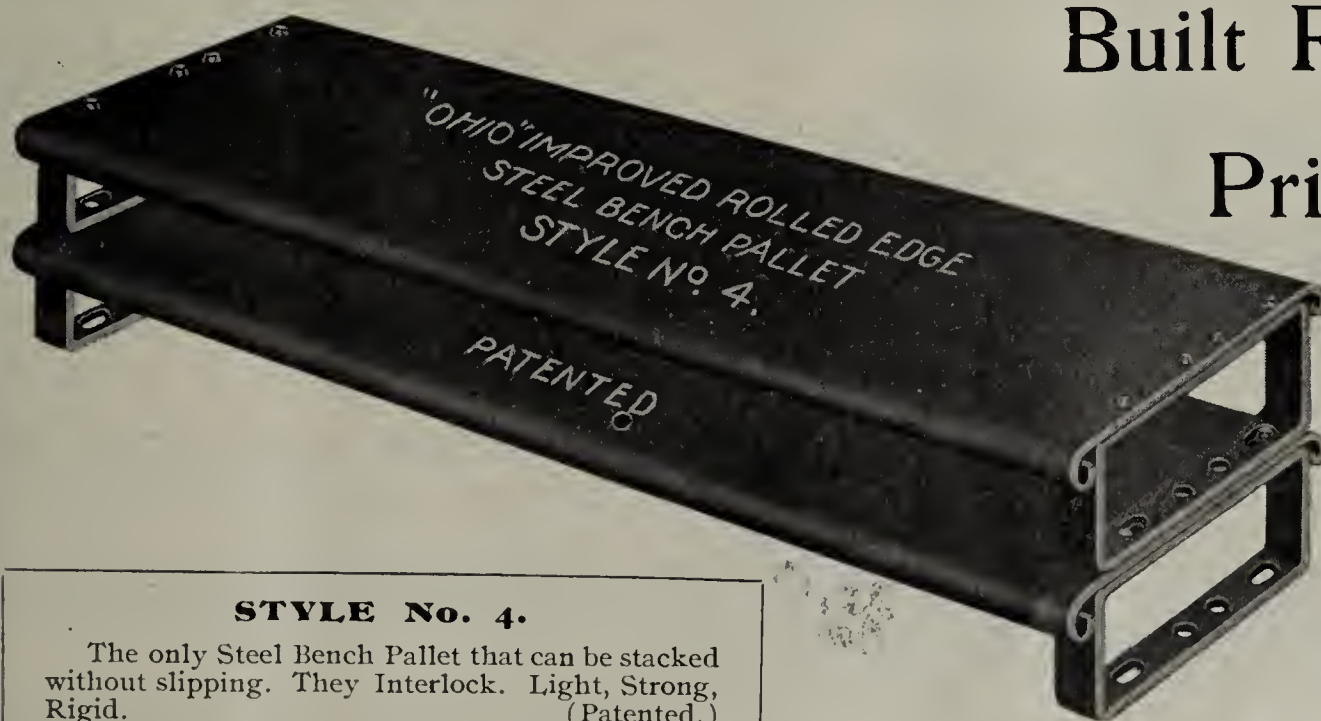
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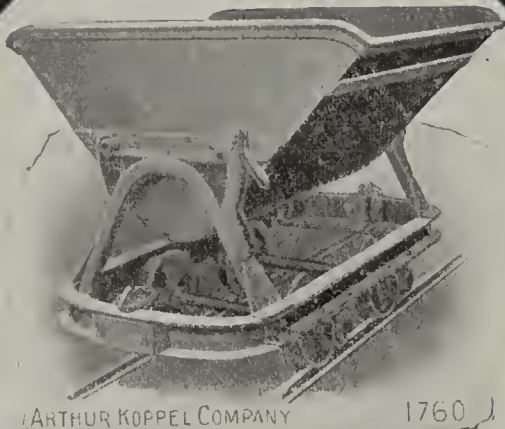


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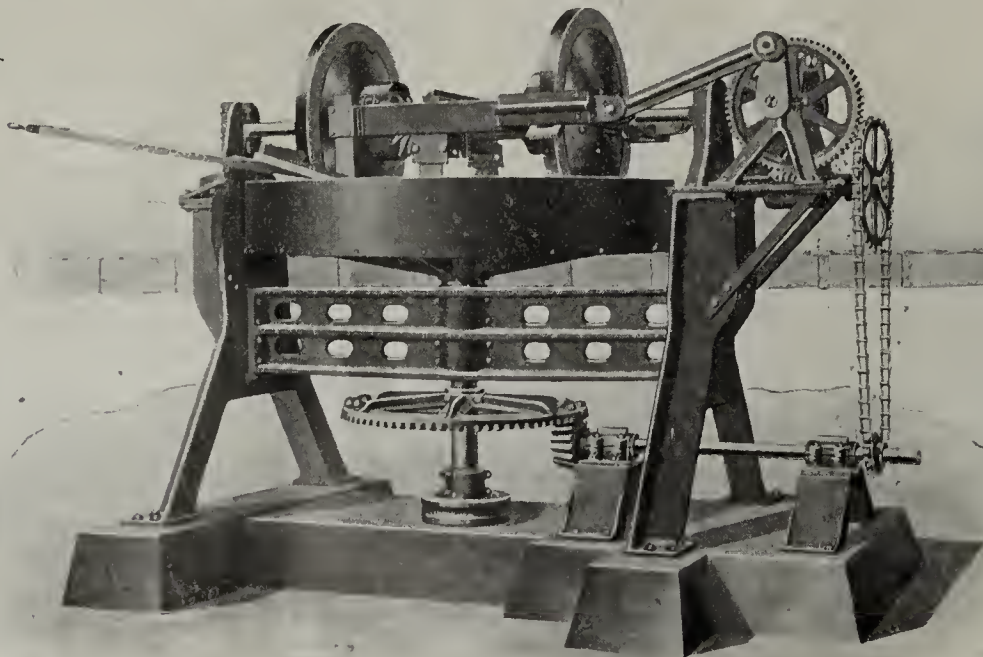
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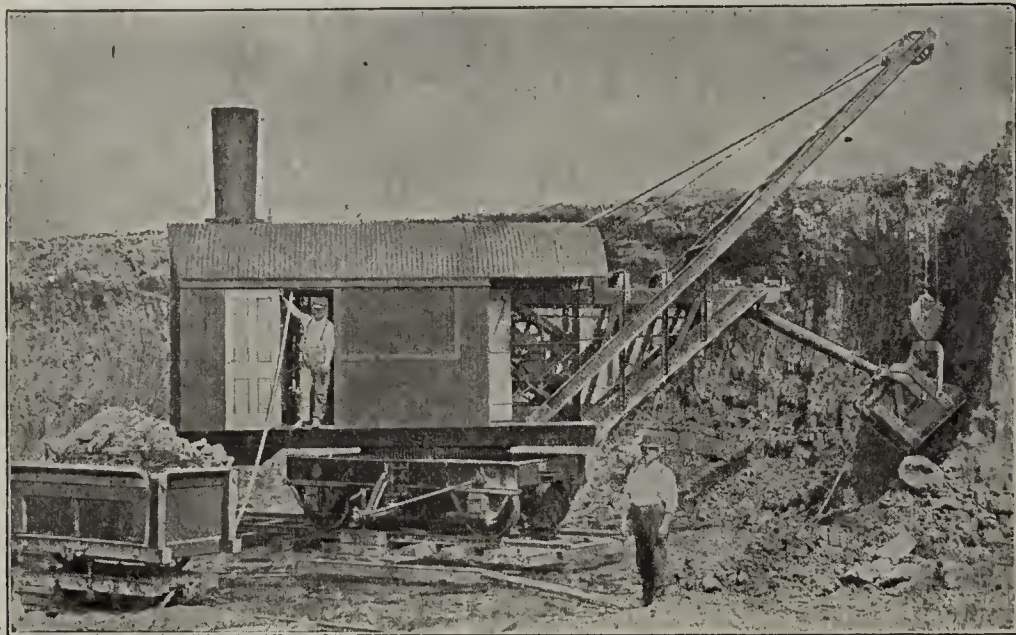
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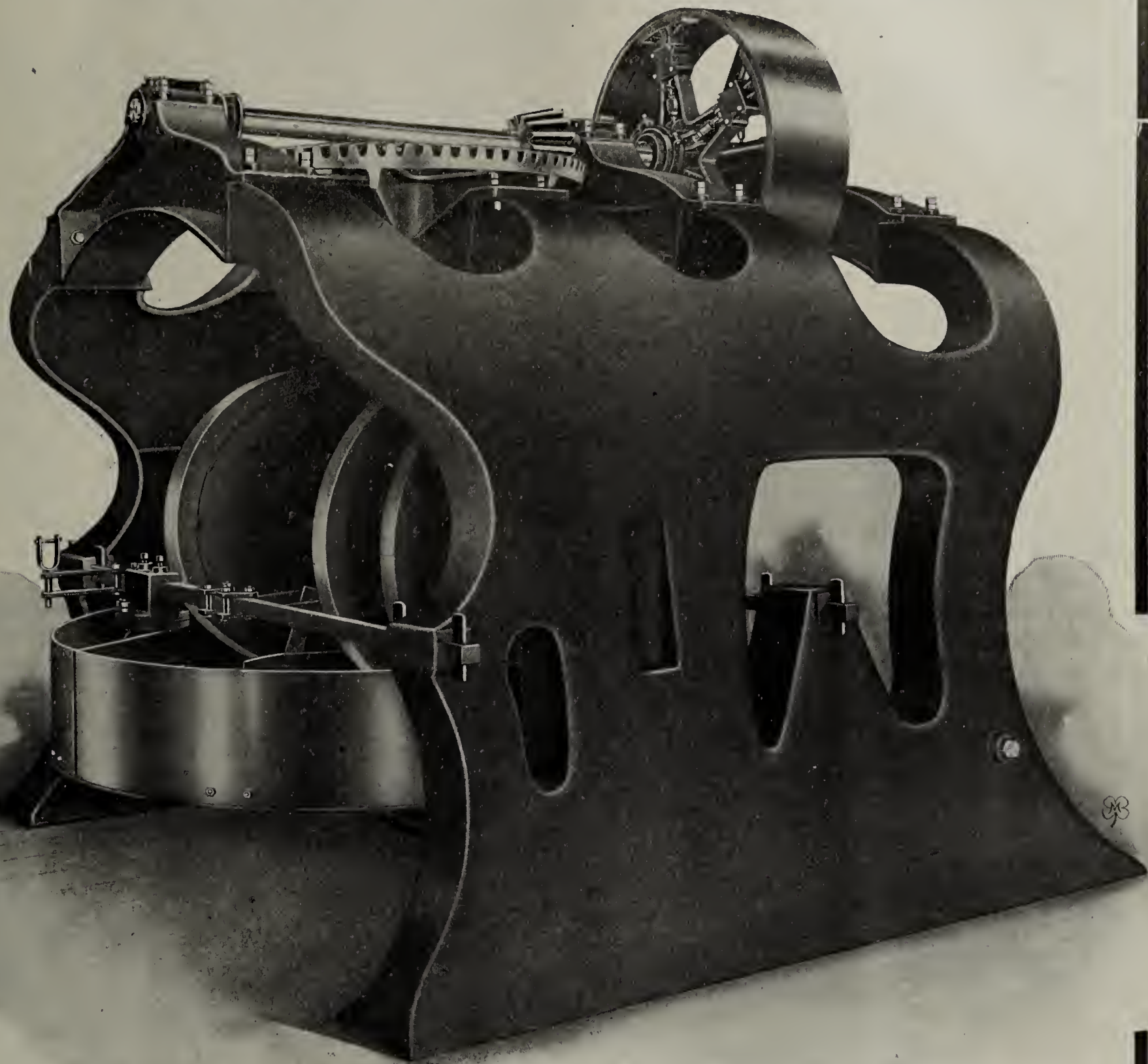
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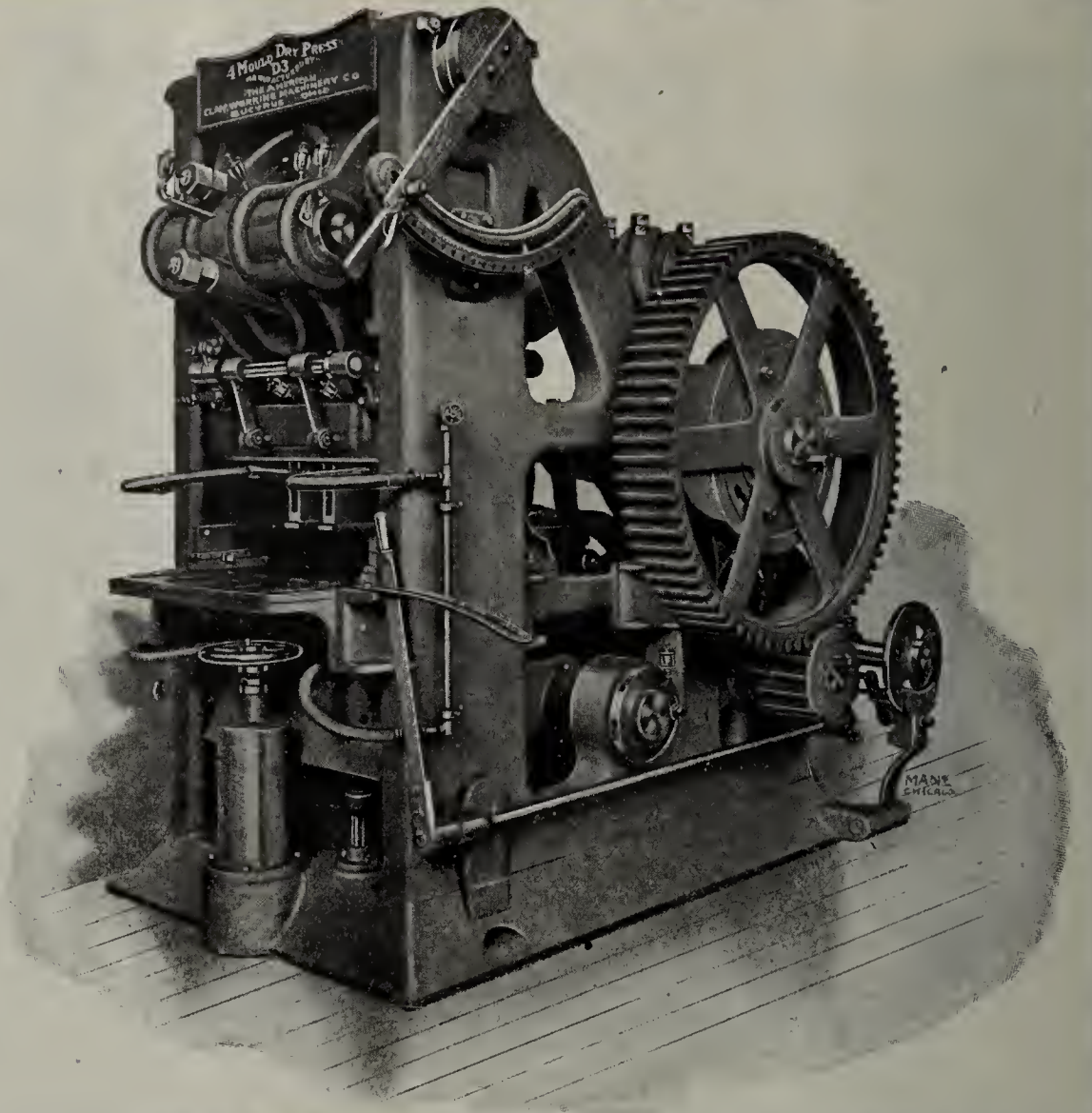
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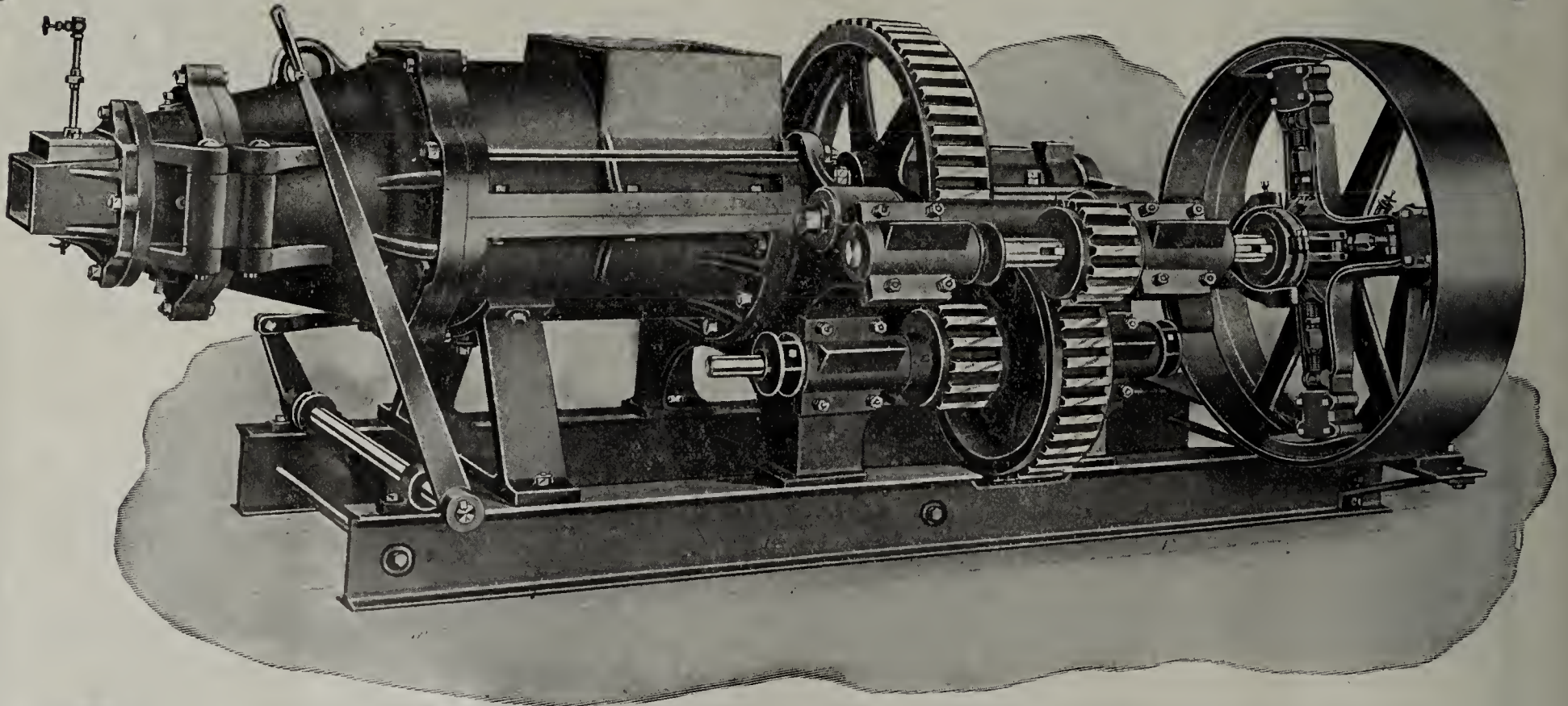


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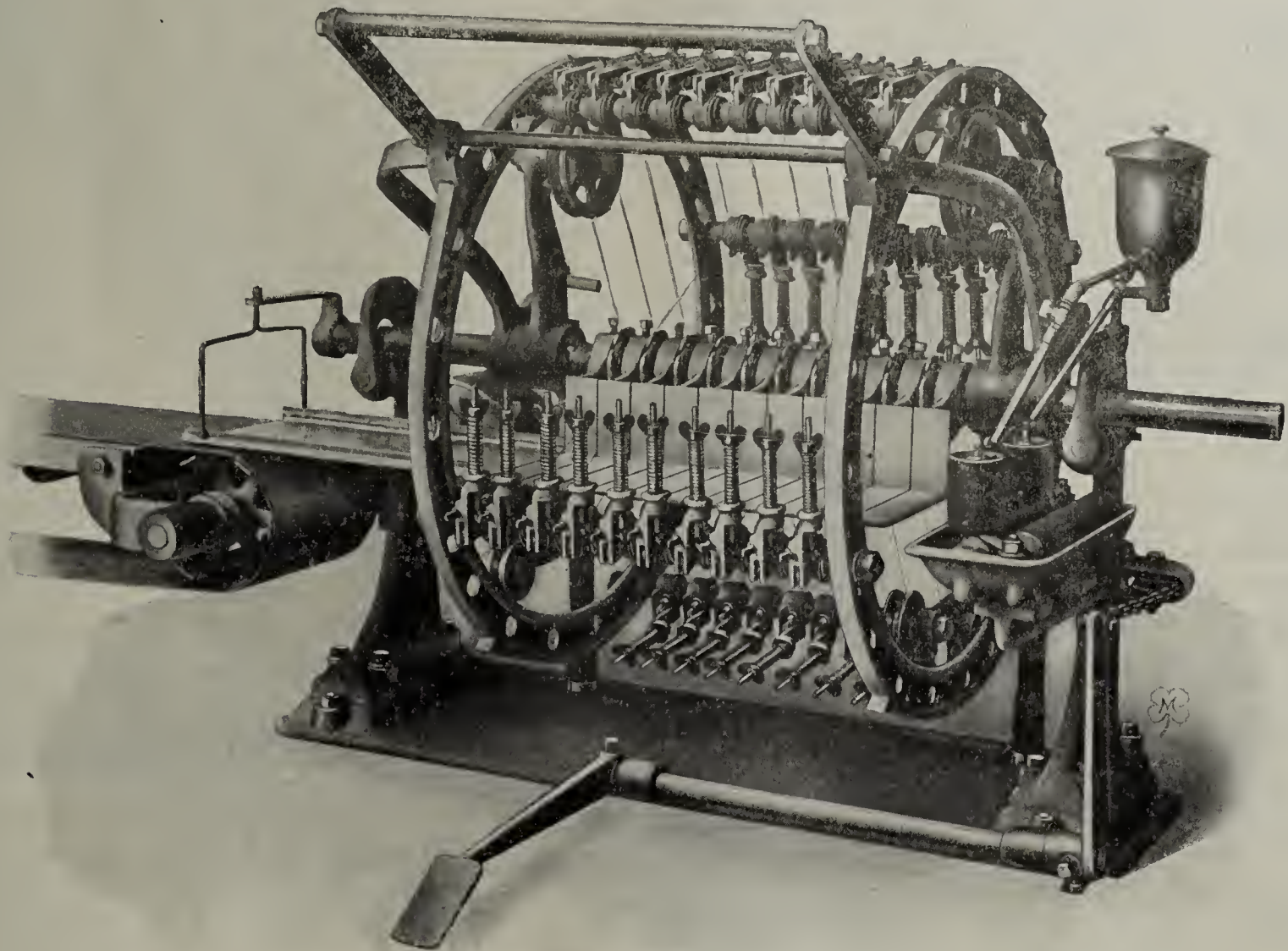


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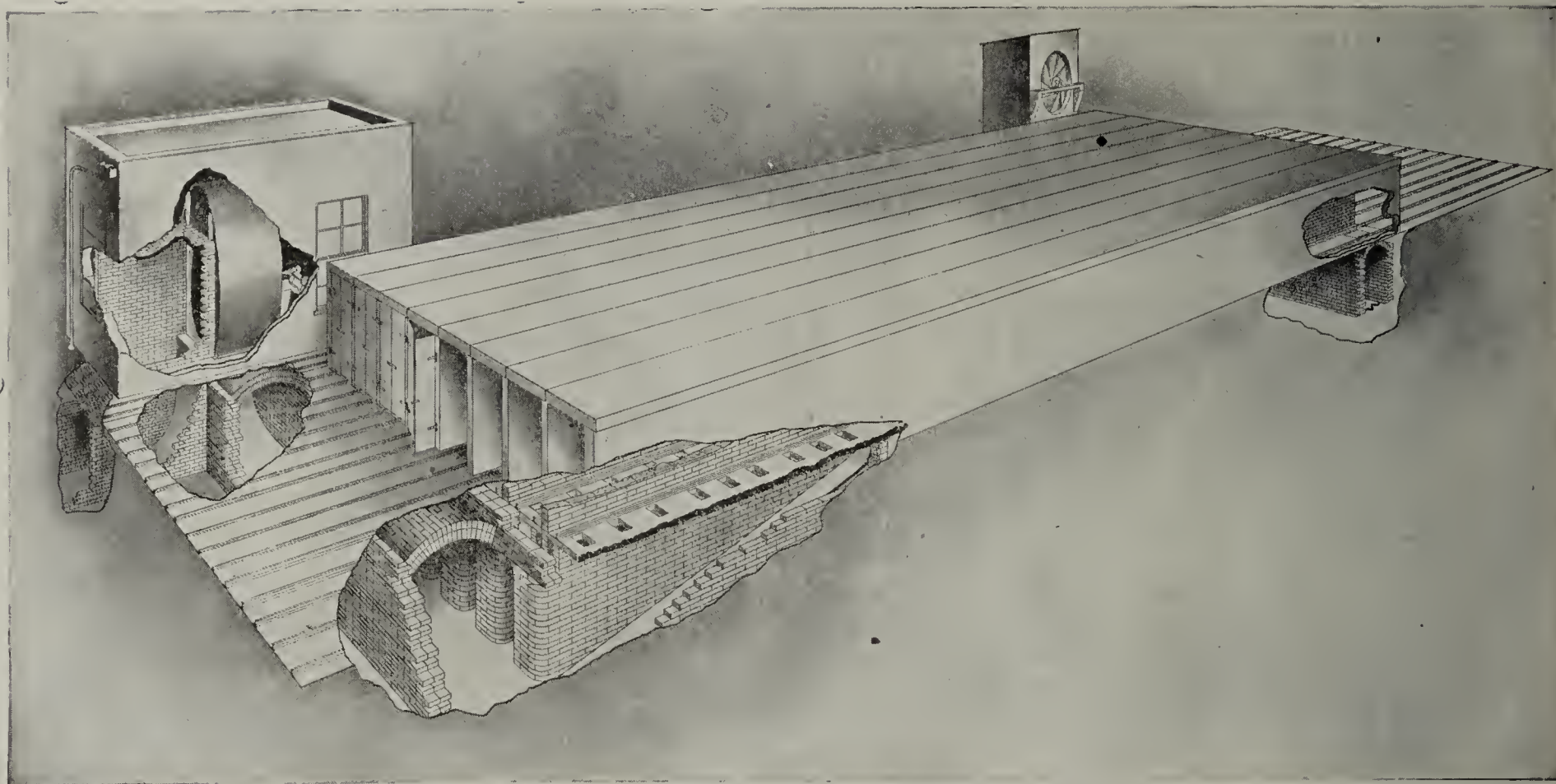
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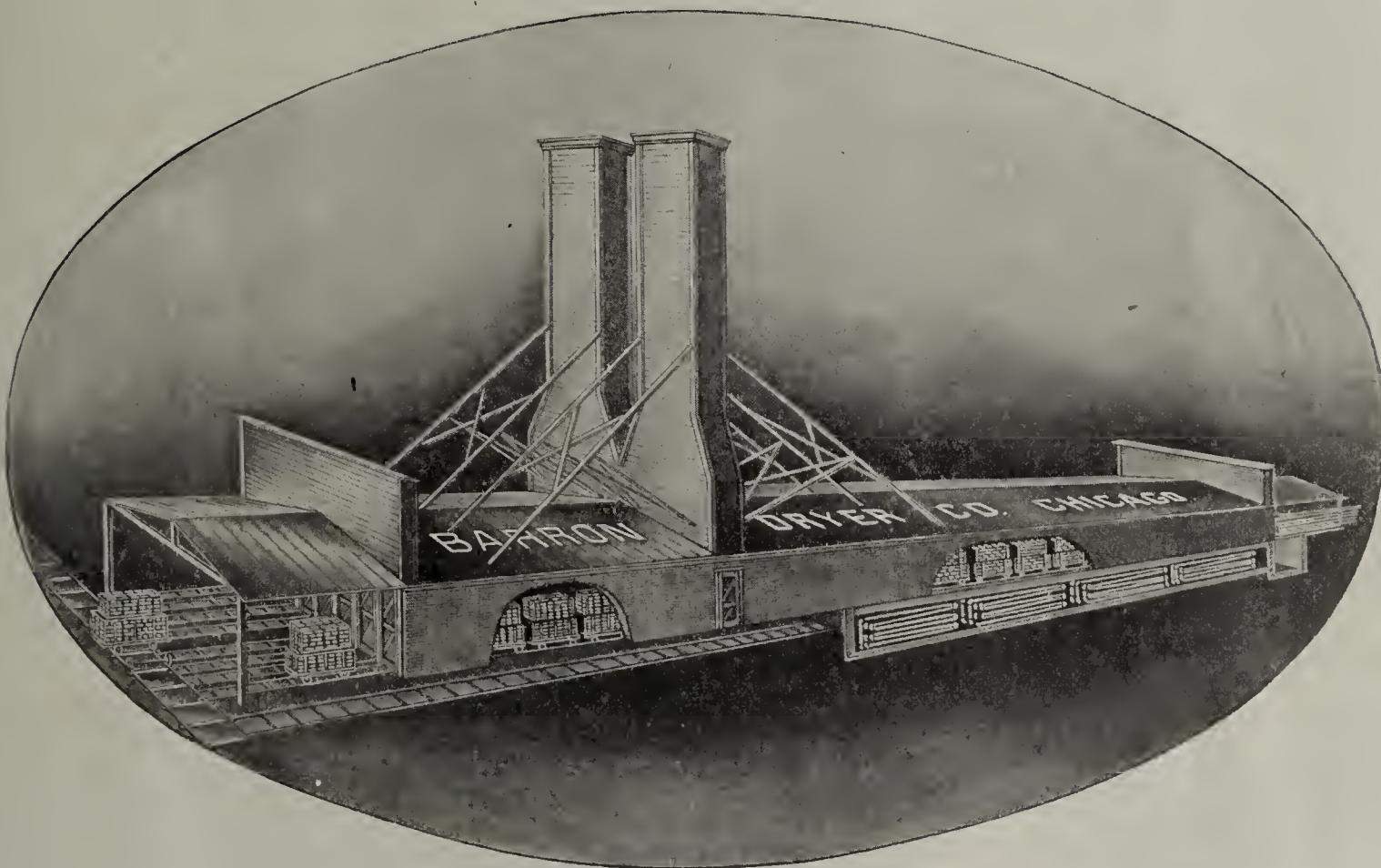
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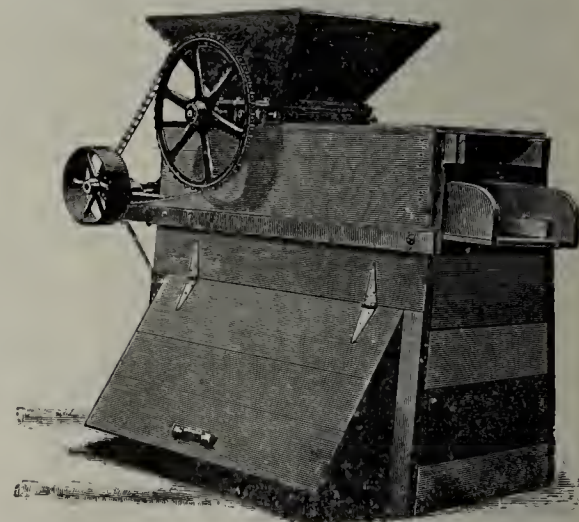
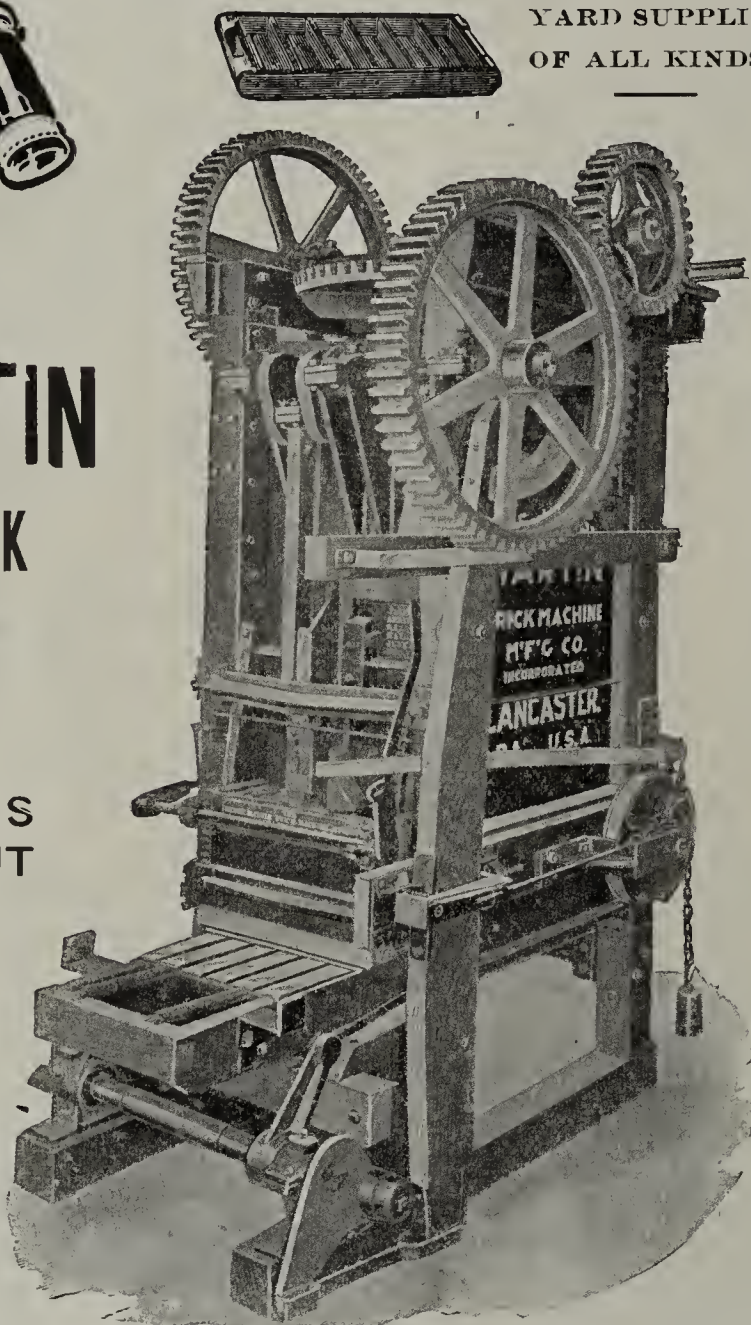
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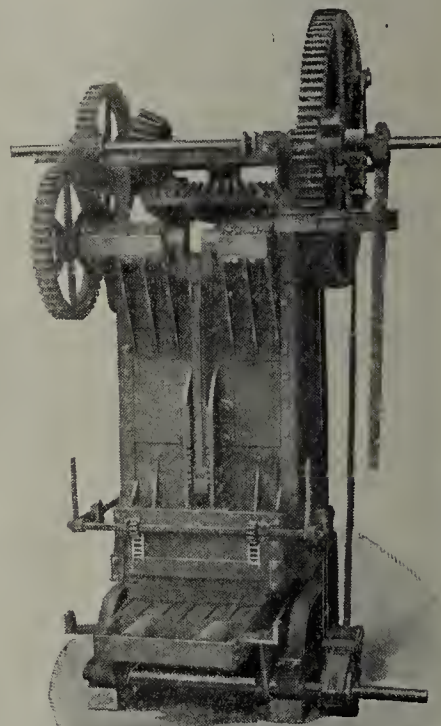
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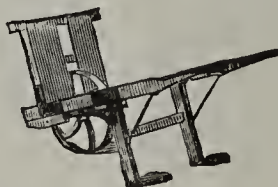
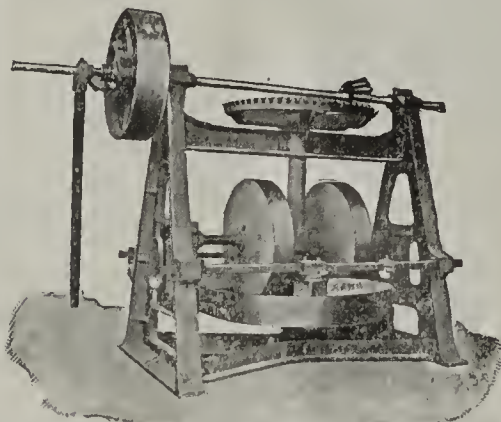
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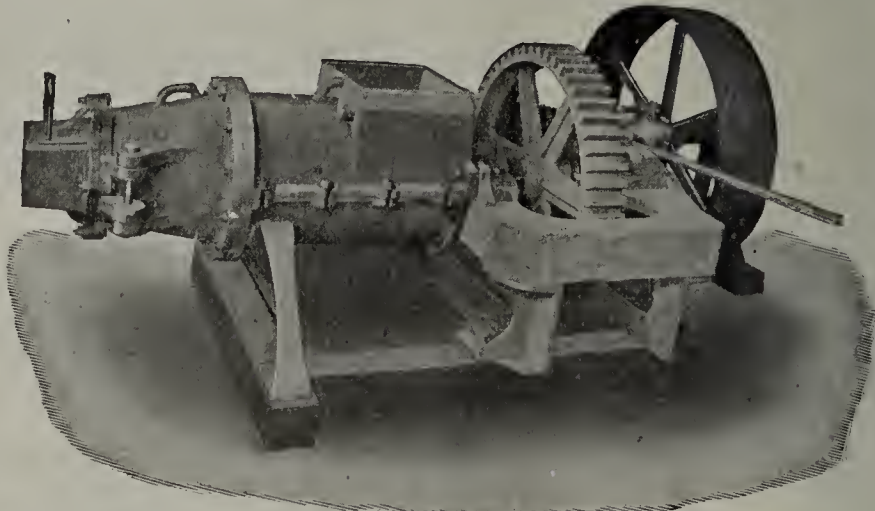
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October 10, 1905, No. 95520
November 14, 1905, No. 804489



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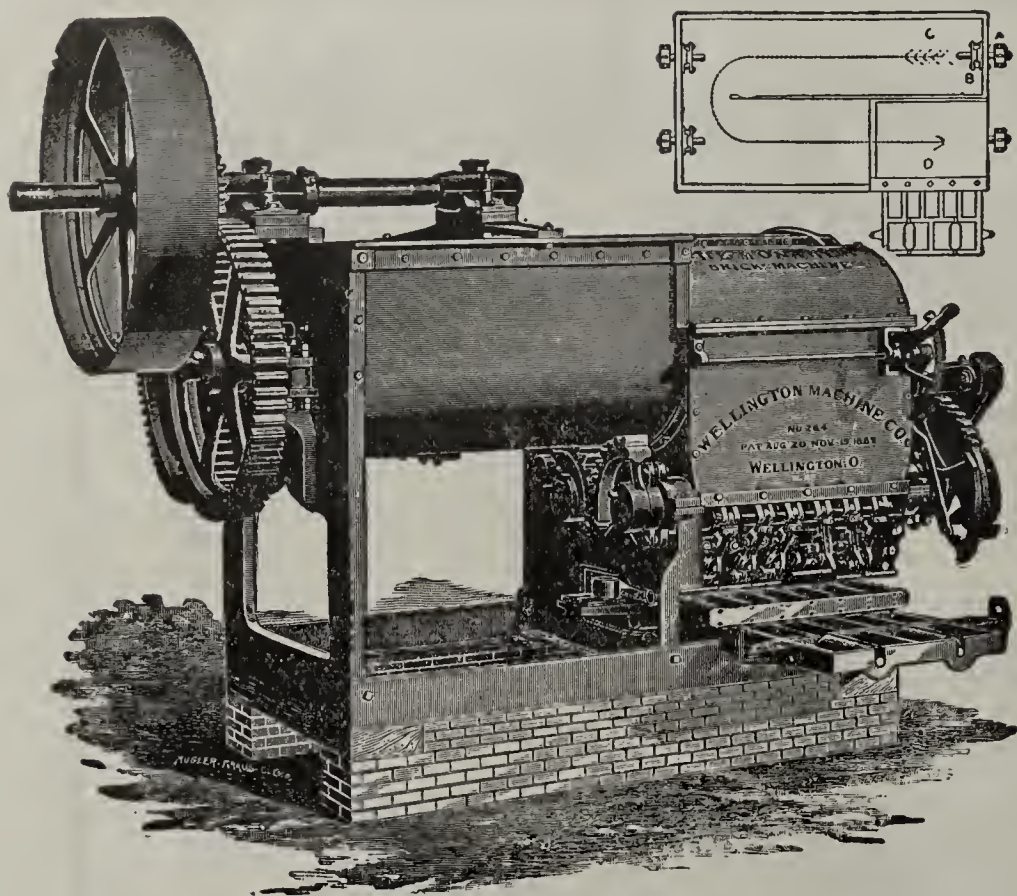
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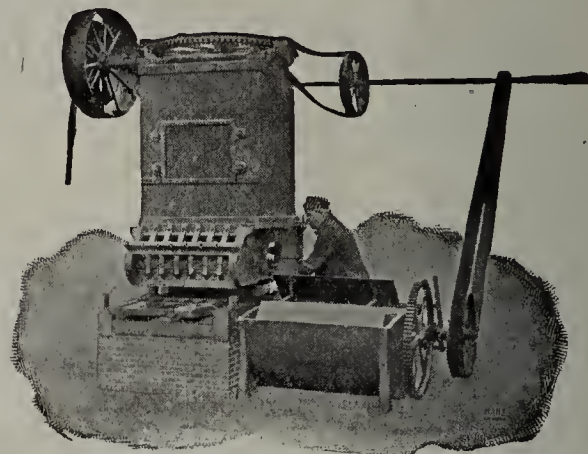
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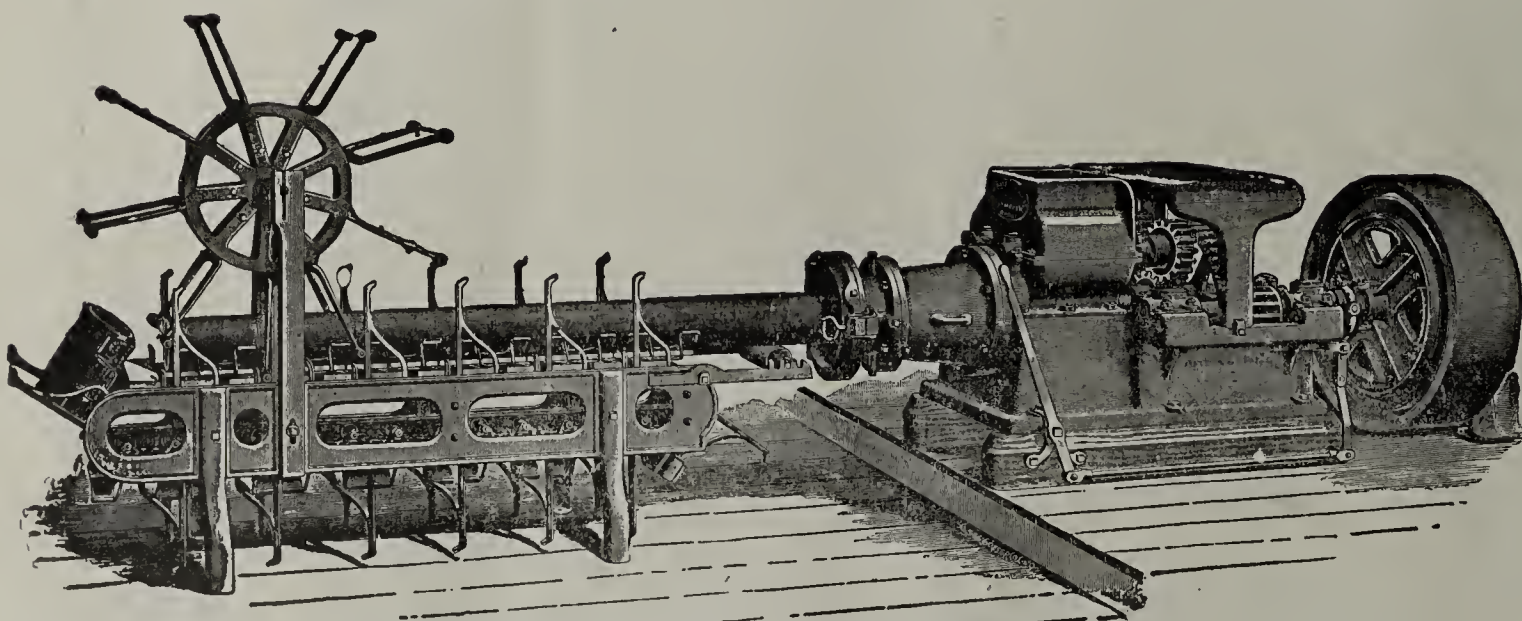
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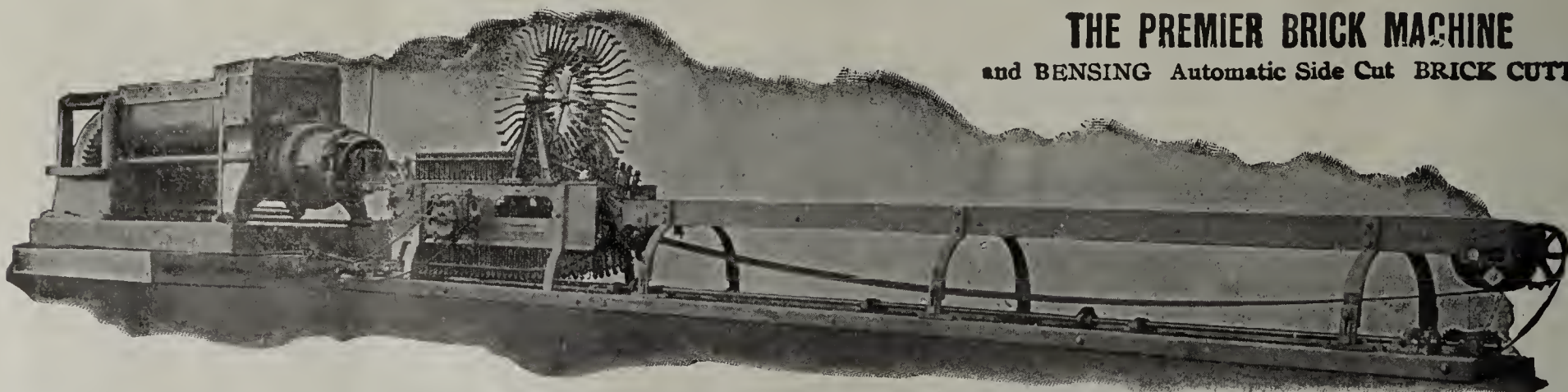
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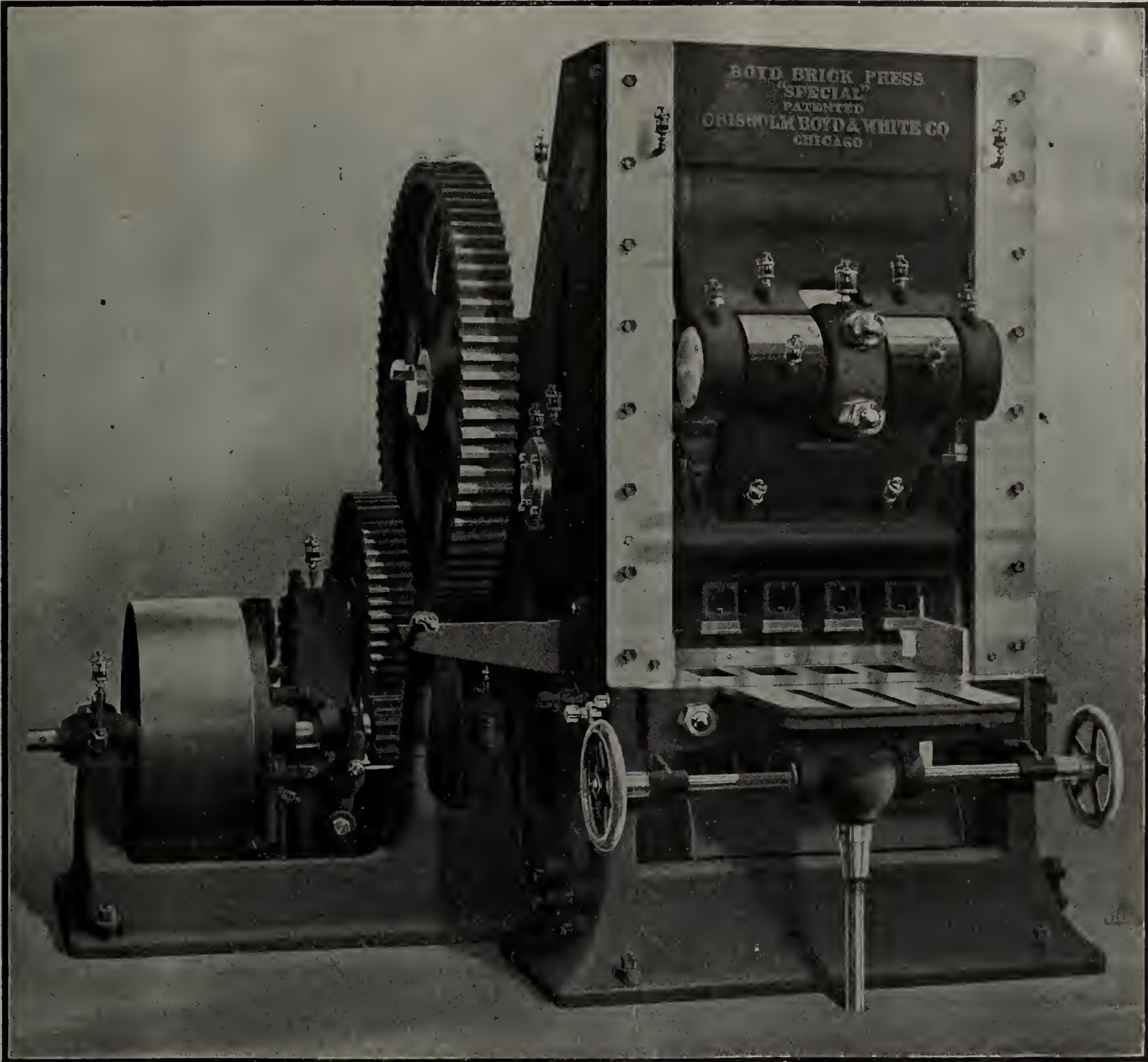
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THE BOYD BRICK PRESS exerts greater pressure, holds it longer, puts more clay into brick, and makes stronger brick than any other Brick Press made. Especially adapted for working shales, and is the only successful machine for making fire brick.

ALL BOYD PRESSES are fitted with our IMPROVED PATENTED MOLD BOX, the liners of which are made of the hardest and toughest known metal, which can be reground at low cost when worn. The molds can be changed in a few minutes.

ITS RECORD: More Boyd Presses in actual operation than of all other Press Brick Machines combined. Write for Catalogue.

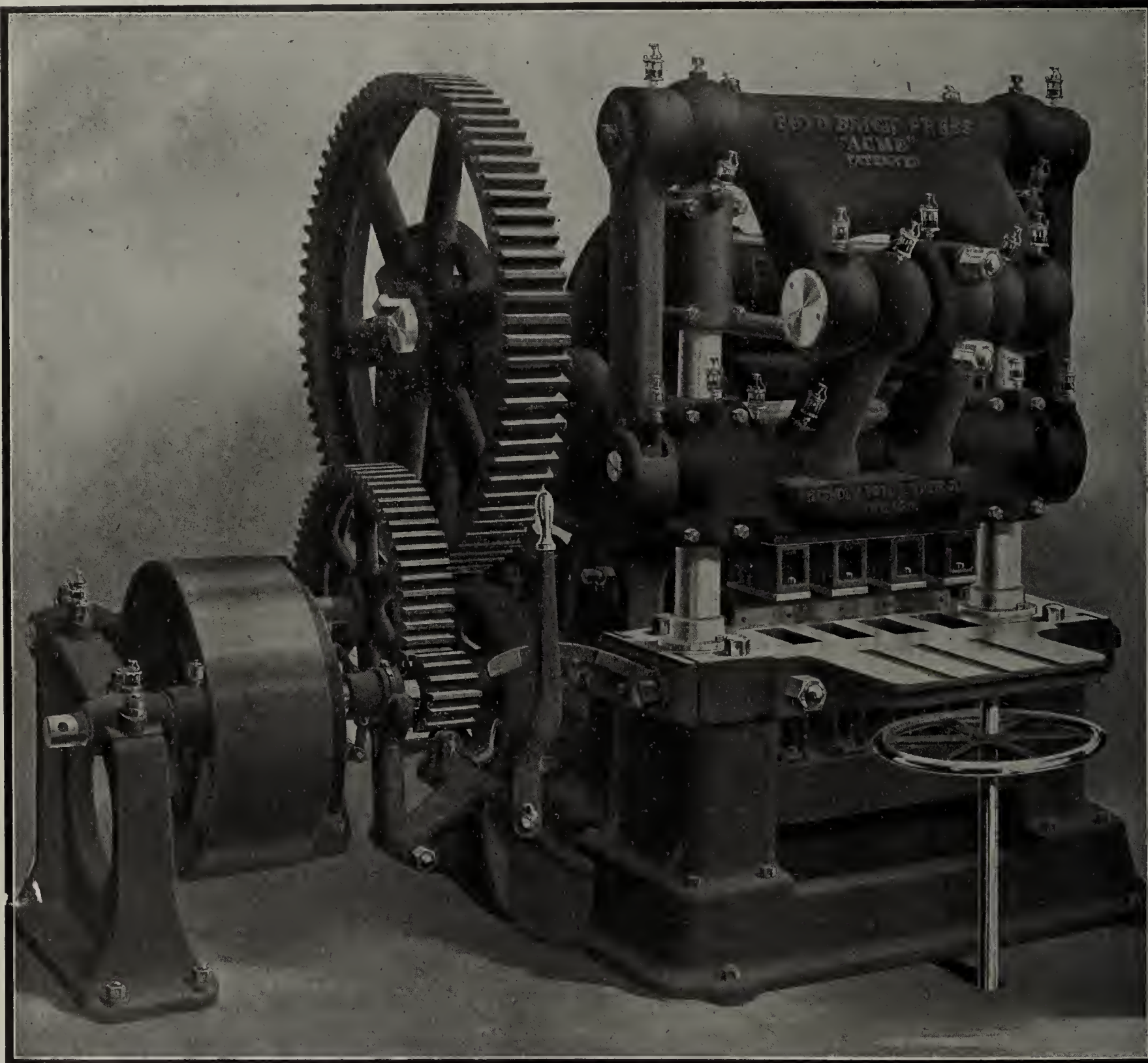
Chisholm, Boyd & White Co.,

OFFICE AND WORKS: 57th and WALLACE STREETS

Chicago, Illinois

THE BOYD BRICK PRESS

FOUR - MOLD "ACME"



IT'S NAME A GUARANTEE. The FOUR-MOLD PRESS above illustrated is our latest improved machine of this design. Over ONE HUNDRED now in use. Especially adapted for working shales.

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We will send to any responsible party a BOYD BRICK PRESS ON TRIAL and subject to purchase after the making and burning of one or more kilns of brick. We take the machine back if not satisfactory. We design and equip brick plants complete. Correspondence Solicited.

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SAND-LIME BRICK MACHINERY

BOYD QUALITY

MODERN METHODS

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NO EXPERIMENTING

More Boyd Presses making sand-lime brick than any other press on the market. The Boyd Press is selected and purchased by those who want the best. Our "Special" Combination Block and Brick Press is the only successful machine in the world for making large building blocks and stones.

Sand-Lime Brick Plants designed and complete machinery equipment furnished, installed and set in operation. Machinery and product guaranteed.

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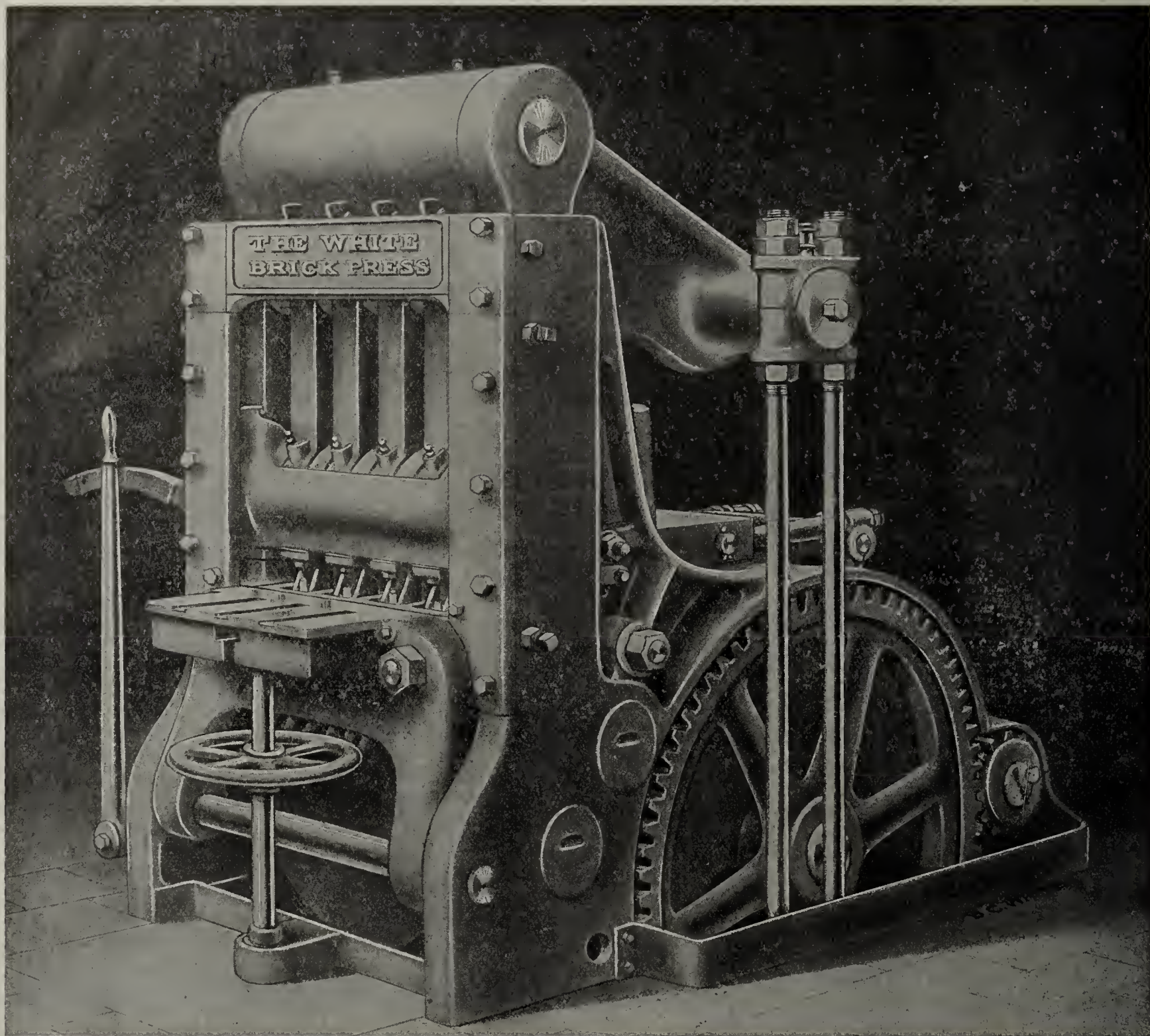
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ILLINOIS



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CURES ALL PRESS TROUBLES. The only Press specially designed for this work and the only Press having *Hinged Mold Table* and *Removable Mold*. Our special Press Catalogue tells all about it.

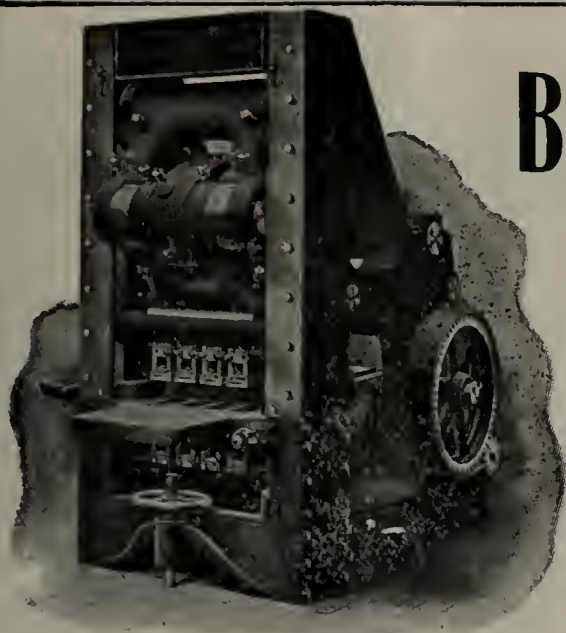
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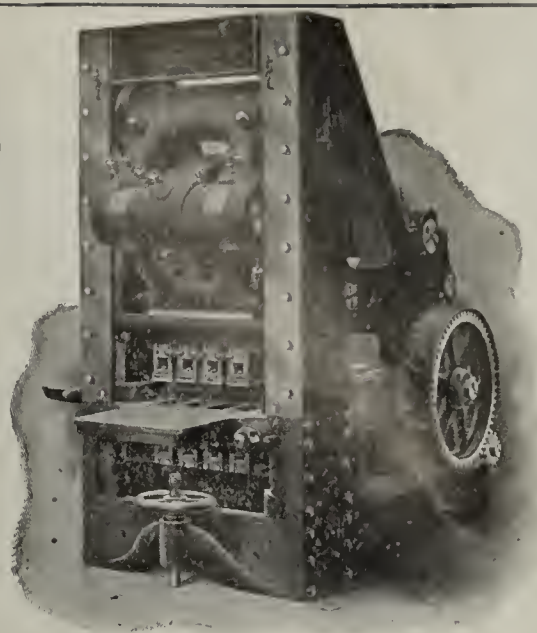
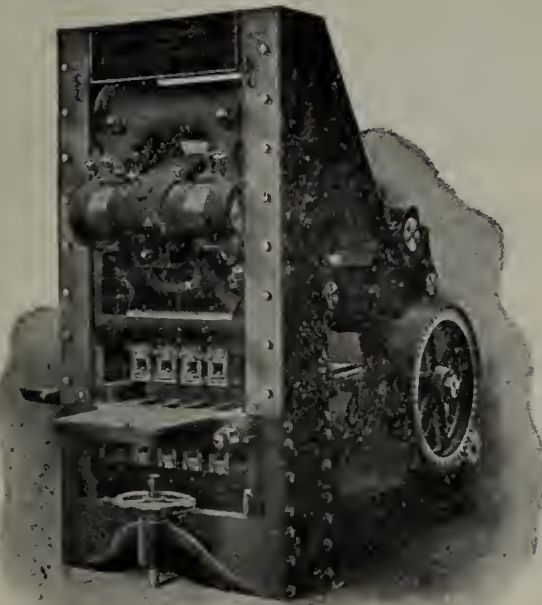
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The **BERG** for the highest grade of pressed brick of shale or clay. It makes all kinds of shapes and sizes of brick. Changes from one shape to another can be made in less than an hour's time.

First-Class Workmanship. Cut Gearing. Fully Warranted.

The **BERG** makes the **best** sand-lime brick and cheapest because it is the strongest machine and gives the highest pressure. Thirty-five sand-lime plants in United States use the **BERG** Brick Press **SUCCESSFULLY**.



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Three distinct pressures make the brick evenly pressed all through. No granulated centers of the brick.

The **BERG** is the **best** for sand and cement because of its strong pressure. Uses less ce-

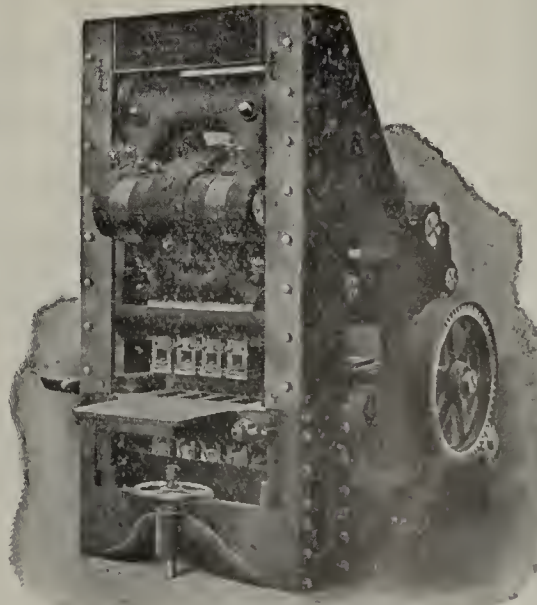
ment, makes cheaper brick.

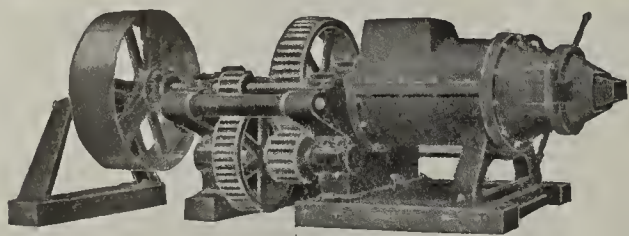
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Many other steps further forward in improvement and highest grade of material and workmanship, also cut gearing. Fully guaranteed as to its success. Manufactured by its inventor in Toronto, Canada, exclusively. Plans and specifications on the different kinds of plants furnished, also all equipments.

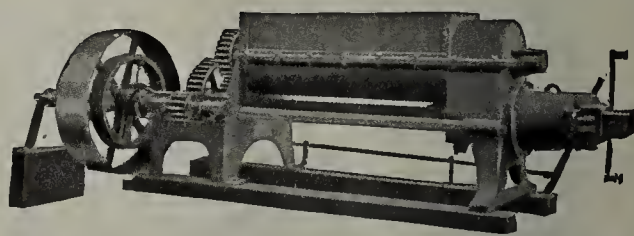
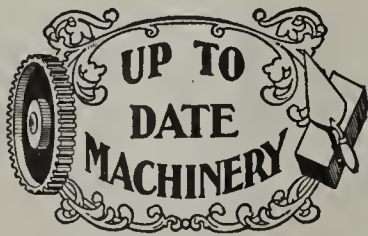
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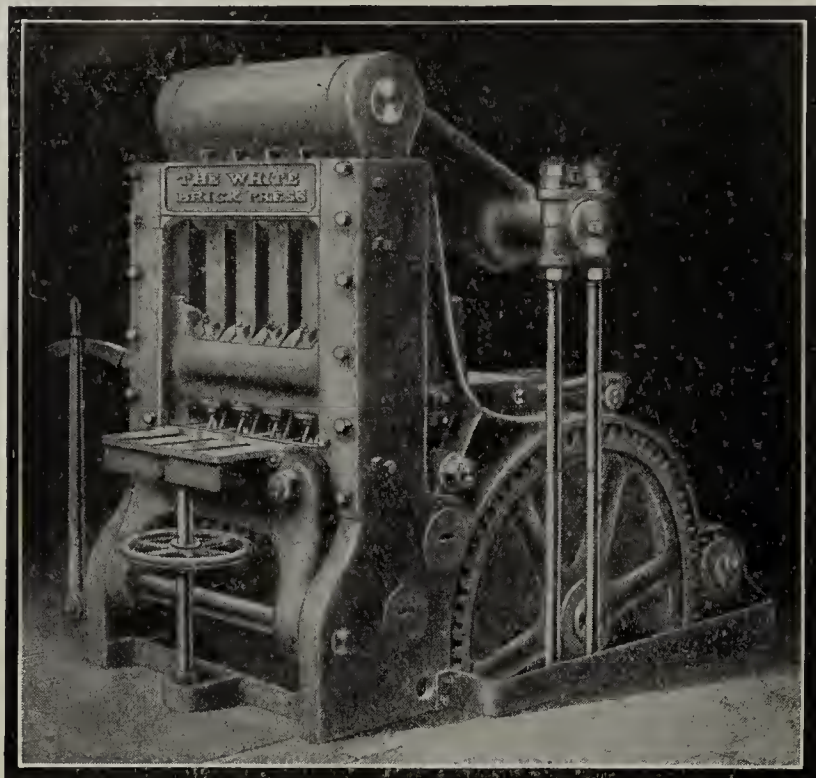
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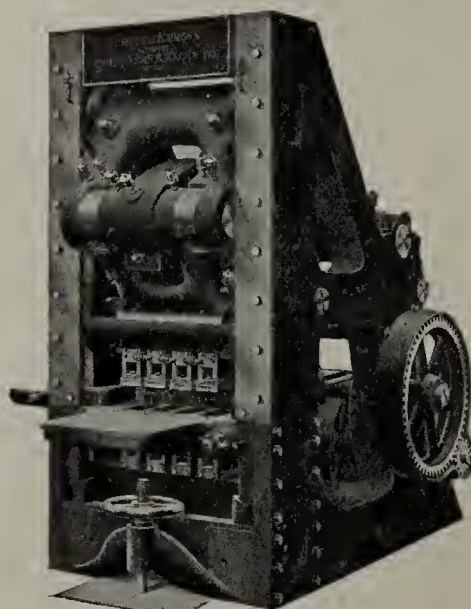
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For Making all Kinds of Brick—
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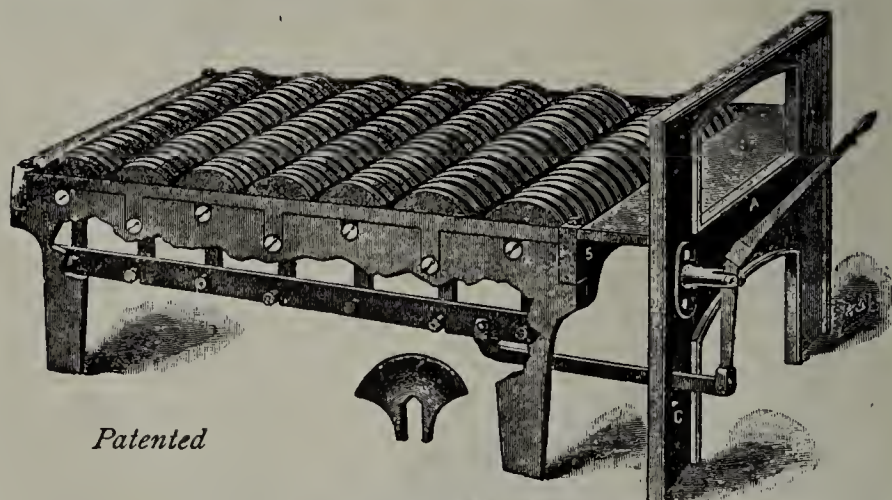
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Full
Line of
Brickyard
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Rocking and Dumping Grates for Kilns. Save coal, save labor, and do away with checked brick. Send for "Lecture on Combustion," by His Satanic Majesty.



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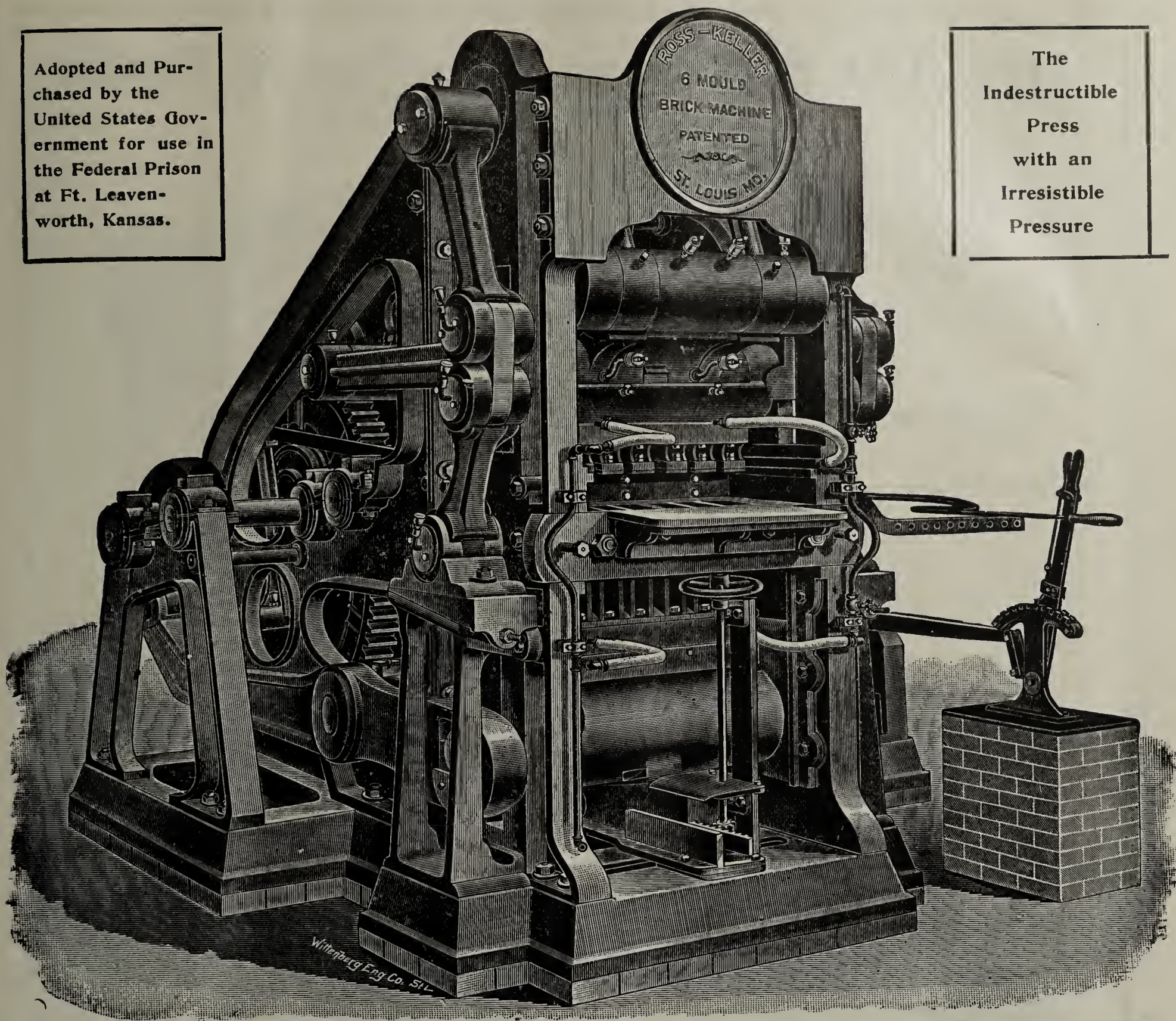
U. S. SELF CLEANING GRATE
In position ready for use. Part of frame cut away to show connection below.

Chicago Brick Machinery Co.

1308 Great Northern Bldg.

Adopted and Purchased by the United States Government for use in the Federal Prison at Ft. Leavenworth, Kansas.

The Indestructible Press with an Irresistible Pressure



WE BUILD

Sand-Lime Brick Plants, Shale and Clay Brick Plants

ARE ALSO SOLE MANUFACTURERS OF THE

Ross-Keller Triple Pressure Brick Press

The strongest and most efficient Brick Machine made, and the only Press that gives three distinct pressures to the brick

ROSS-KELLER TRIPLE PRESSURE BRICK MACHINE CO.

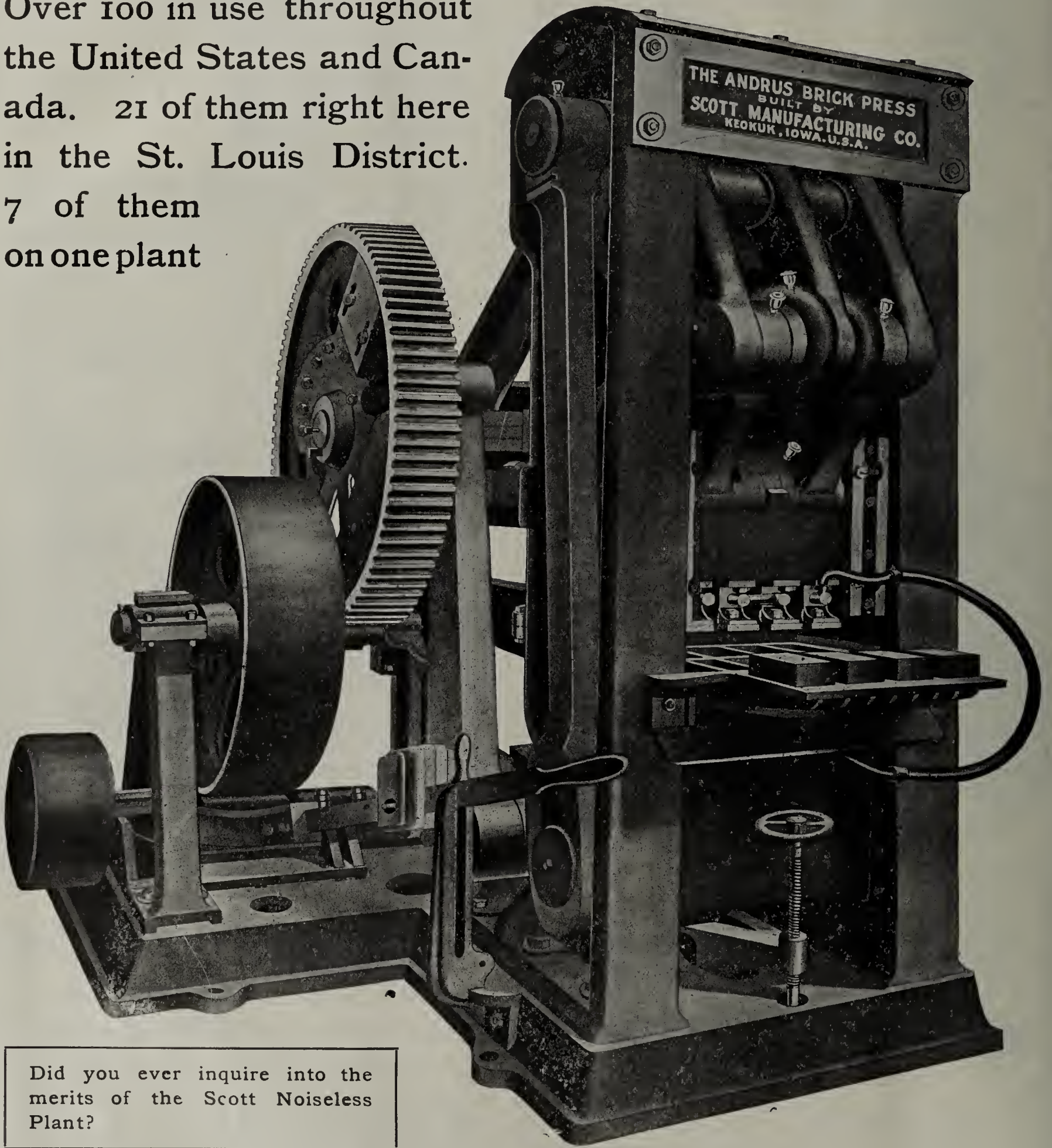
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The Andrus Four Mold Brick Press

"THE PRESS THAT SCOTT BUILDS"

Over 100 in use throughout the United States and Canada. 21 of them right here in the St. Louis District. 7 of them on one plant



Did you ever inquire into the merits of the Scott Noiseless Plant?

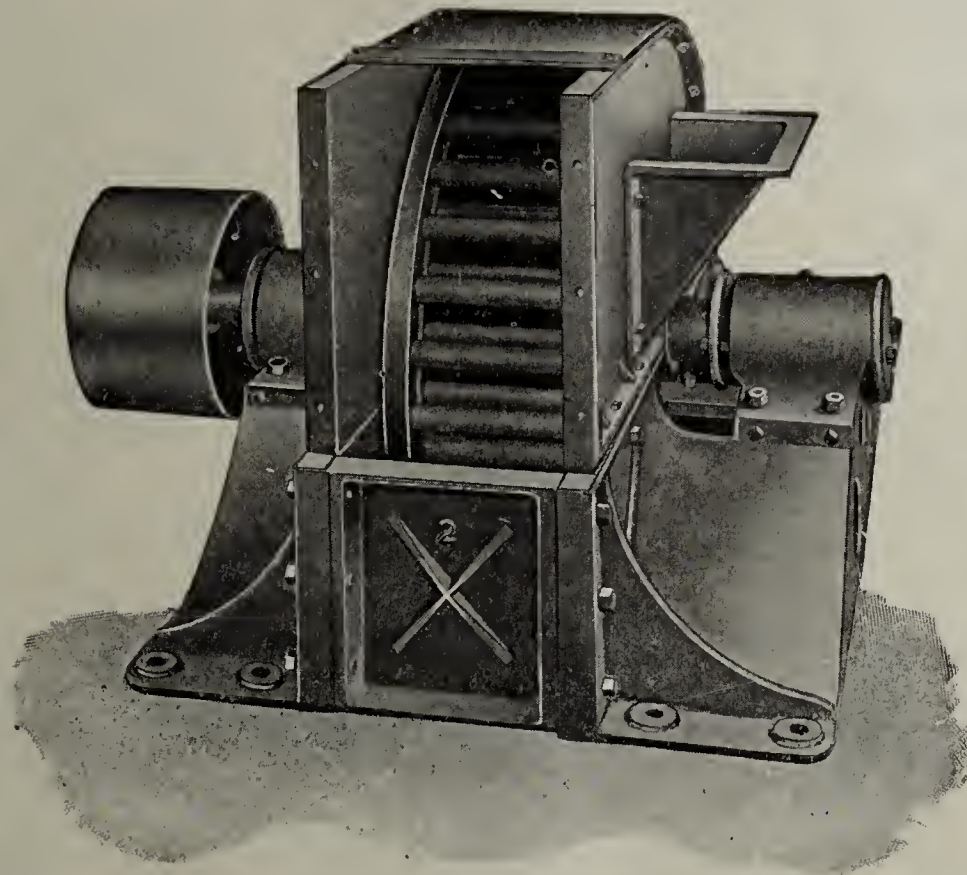
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602 Commonwealth Trust Building :: St. Louis, Mo.

The Fernholtz Brick Machinery Company

Sizes

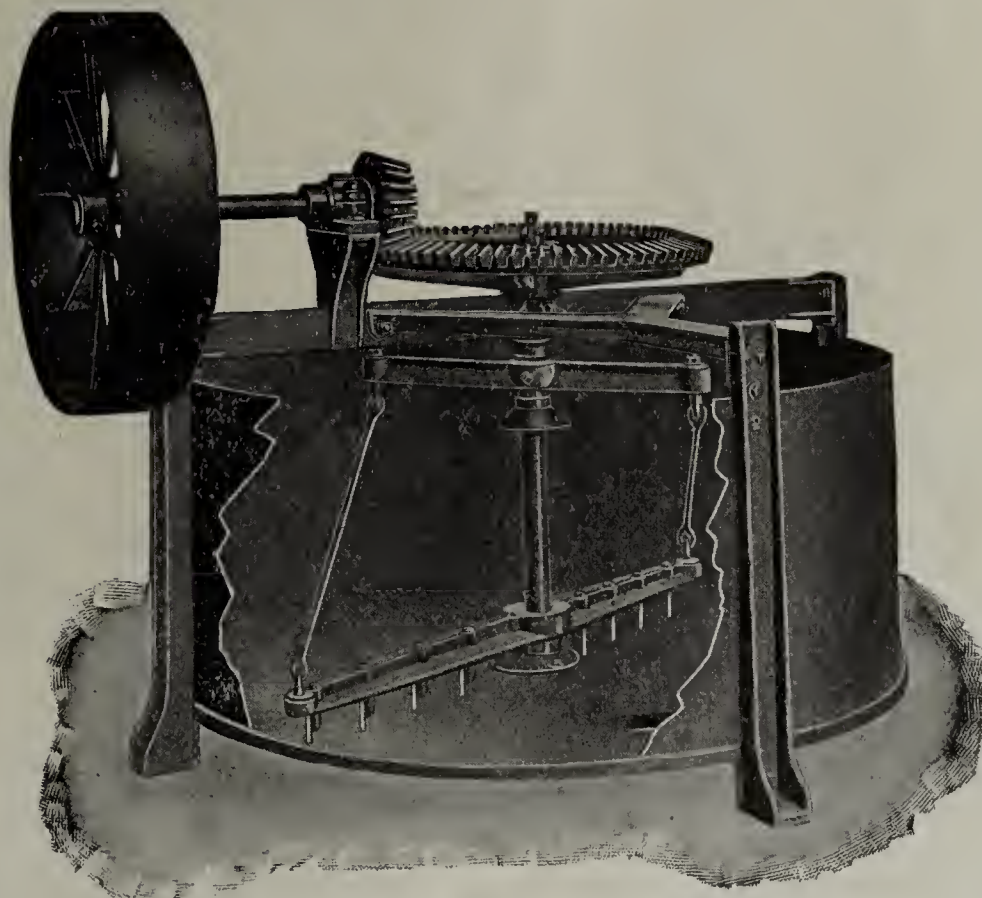
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Fitted
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THE FERNHOLTZ CLAY PULVERIZER

If you want
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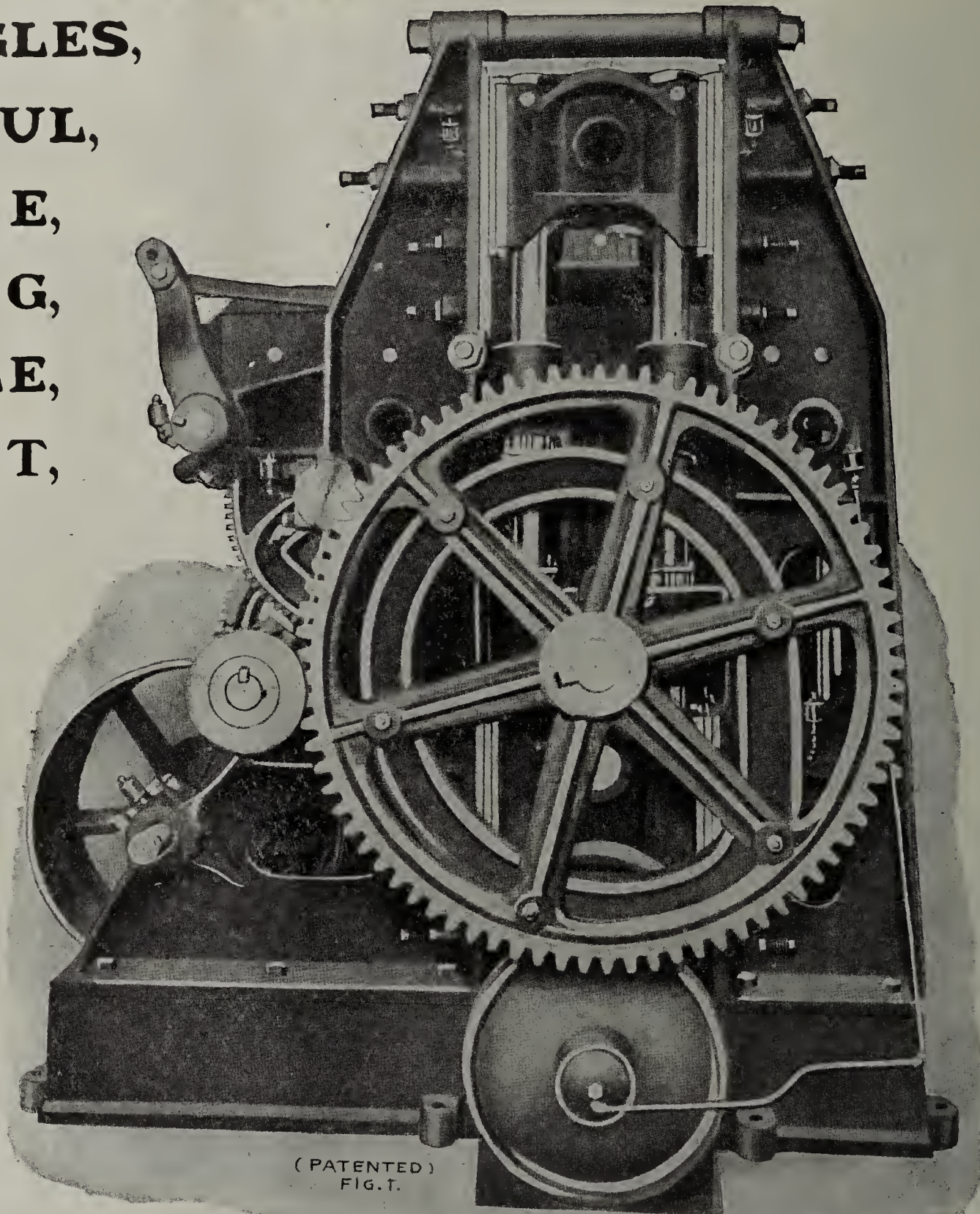
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NO TOGGLES,
POWERFUL,
SIMPLE,
STRONG,
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RELIANCE
DRY PRESS



THE ONLY MACHINE MAKING BRICK WITHOUT GRANULATED CENTERS.
We Design and Equip Dry Press Brick Plants Complete
WRITE TO-DAY FOR PARTICULARS. ✂ ✂ ✂ SEND US A SAMPLE OF YOUR CLAY.

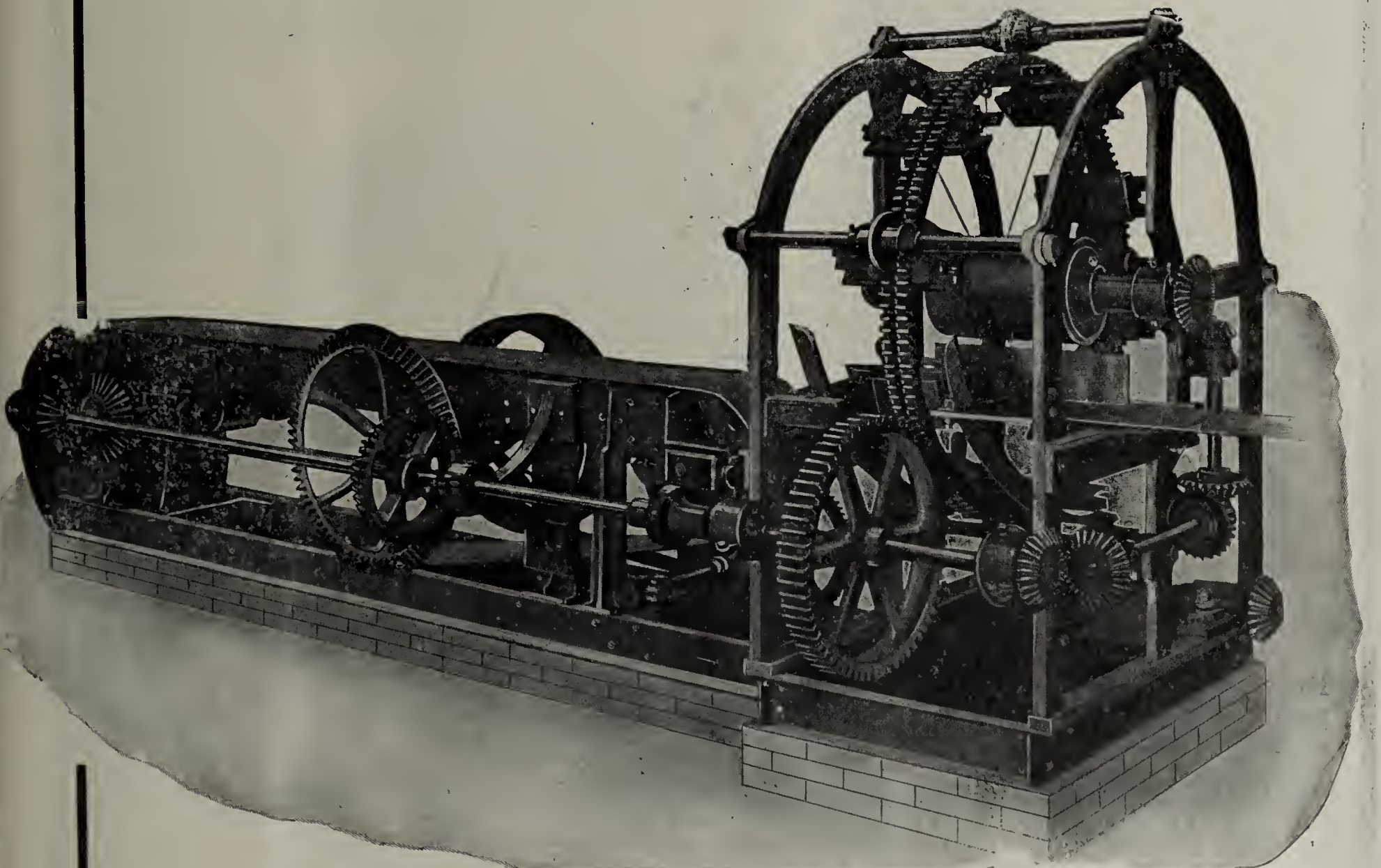
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ARE YOU INTERESTED IN A CUTTER THAT WILL DOUBLE YOUR PROFITS FOR 1907?

The Hix "Happy Thought" Automatic Cutter will do it. This Cutter is without an equal as it does what others can not do. Will cut end or side cut brick, hollow blocks or conduits any length or size desired. The capacity is unlimited. No clay wasted, every brick a perfect one, no complicated machinery to get out of order and give annoyance.

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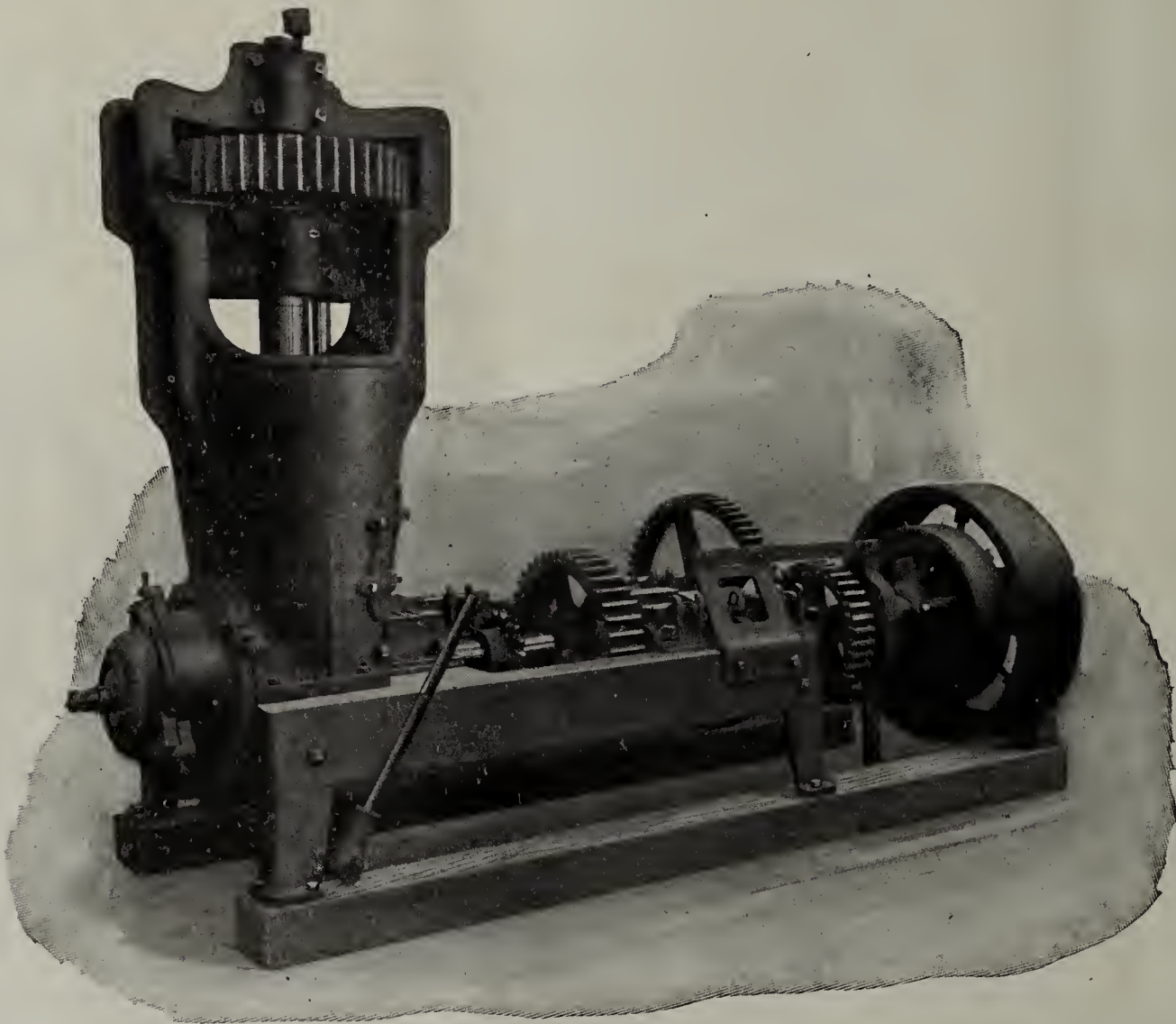


THE HIX "HAPPY THOUGHT" AUTOMATIC SIDE CUT BRICK CUTTER.

The Wallace Manufacturing Company
FRANKFORT, IND., U. S. A.

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THE No. 9A which was always a leader among medium size Drain Tile Machines has gone through complete reconstruction and the New Model stands alone without a competitor as a Modern High Grade Pattern.



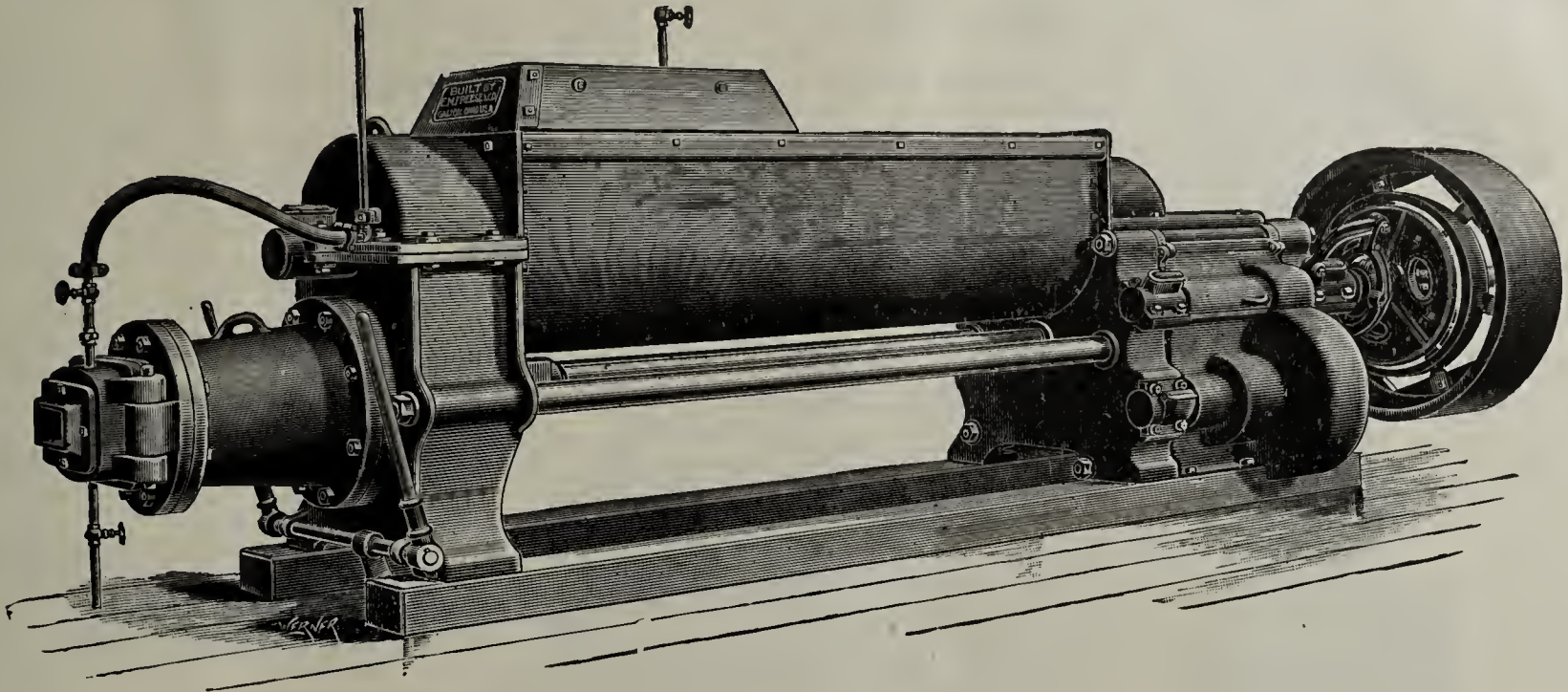
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Is built with one-piece gear frame and one-piece upright cylinder, machined together. Knives forged from hard, high-carbon steel; each one independently adjustable for pitch. Marine pattern up-thrust. White iron augers and casings. Self oiling bearings. Heavier gears and shafts. Weight 1000 pounds more than the No. 9A

If you do not know all about Brewer Tile Machines it will pay you to look them up. Cores of the tile dies held without bridge or bracket.

H. BREWER & CO. **TECUMSEH**
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UNION BRICK MACHINES



We build these Machines in five sizes. Capacities to 10,000 brick per hour.

Several hundred are in everyday use. They do first-class work and are convenient, economical and durable. This can be verified by investigation.

We also build Brick Machines with separate Pug Mill.

Don't forget our Automatic Cutters. They give satisfaction.

State your requirements and let us furnish particulars.

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THE POTTS HORIZONTAL BRICK MACHINE

Built Entirely of Iron and Steel.

The only machine of this class
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Steel Shaft.

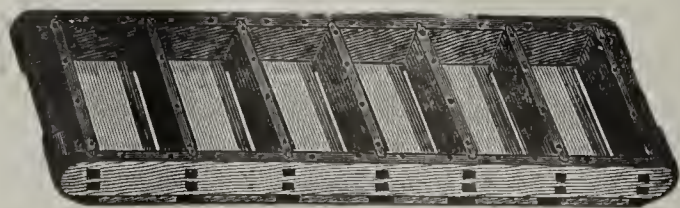


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Built of the Best
Material by the Best
Workmen.

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Simple, Strong and
Durable.
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No extra pug mill required to enable working the clay direct from the bank. Its great strength enables working the clay as stiff as practicable, insuring brick which will be
STRAIGHT and SQUARE.

THE LEADER OF ALL SAND MOULD MACHINES.



**BRICK MOULDS A SPECIALTY
QUALITY IS OUR AIM.**

We manufacture a complete line of Brick Yard Supplies. Write for prices.

C. & A. POTTS & CO., Indianapolis, Ind.

BRICK DRYERS

The largest and best. The drying done upon an entirely new principle. Brick made today. Set in Kiln tomorrow. Thoroughly dry. Will dry the most tender clay with no loss from cracking.

It has **No cars**

No transfer cars

No rail

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No extra engine

No high or expensive stack

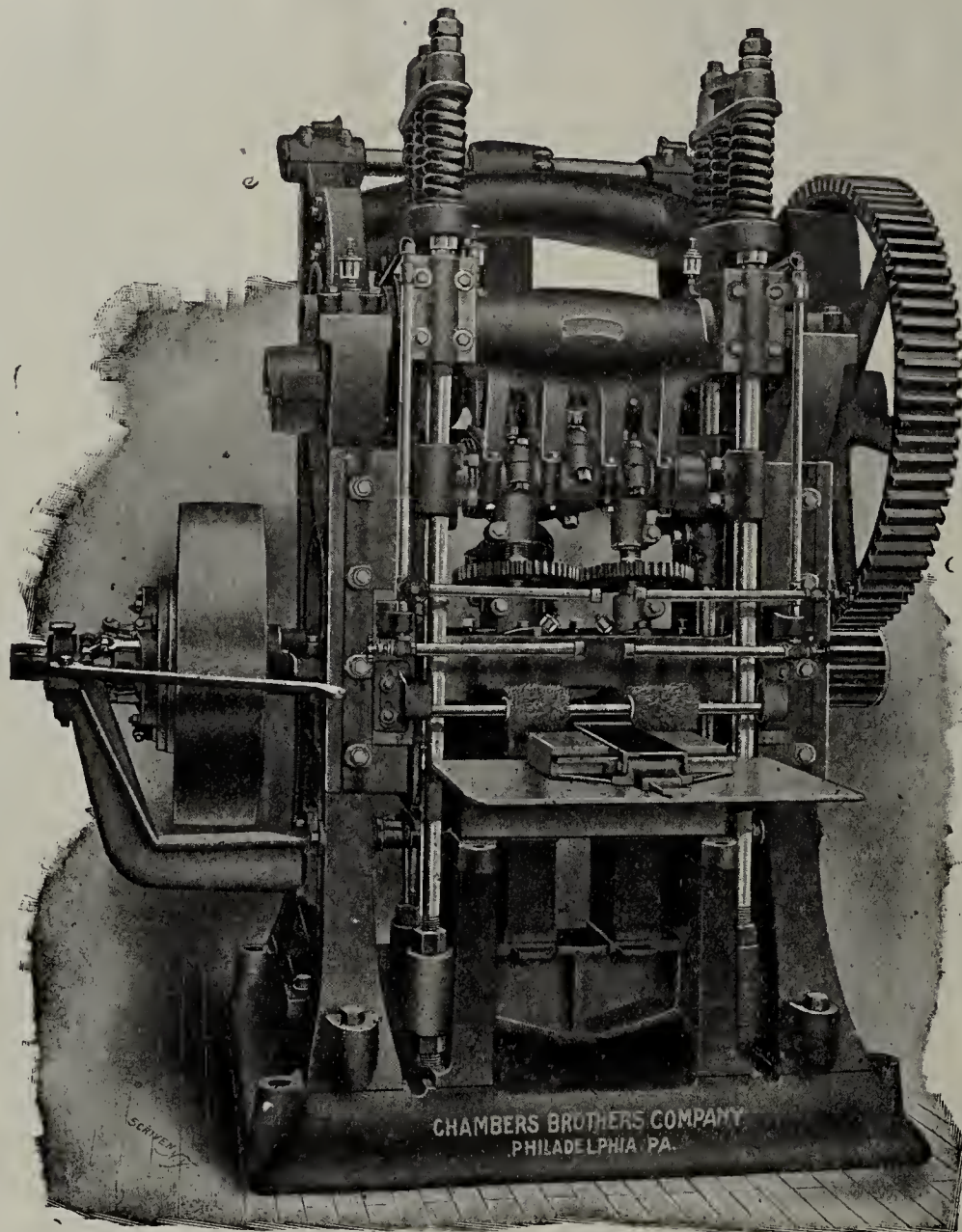
The best dryer on the market. Manufactured by

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MACHINERY FOR BUILDING BRICK AND FOR STREET PAVERS

Weight
 about
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 Capacity
 2,000 bricks
 per hour.



Single Crank
 Movement
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 all above the
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Automatic End Cut Brick Machines of five sizes, having capacity
 from 10,000 to over 100,00 brick daily under
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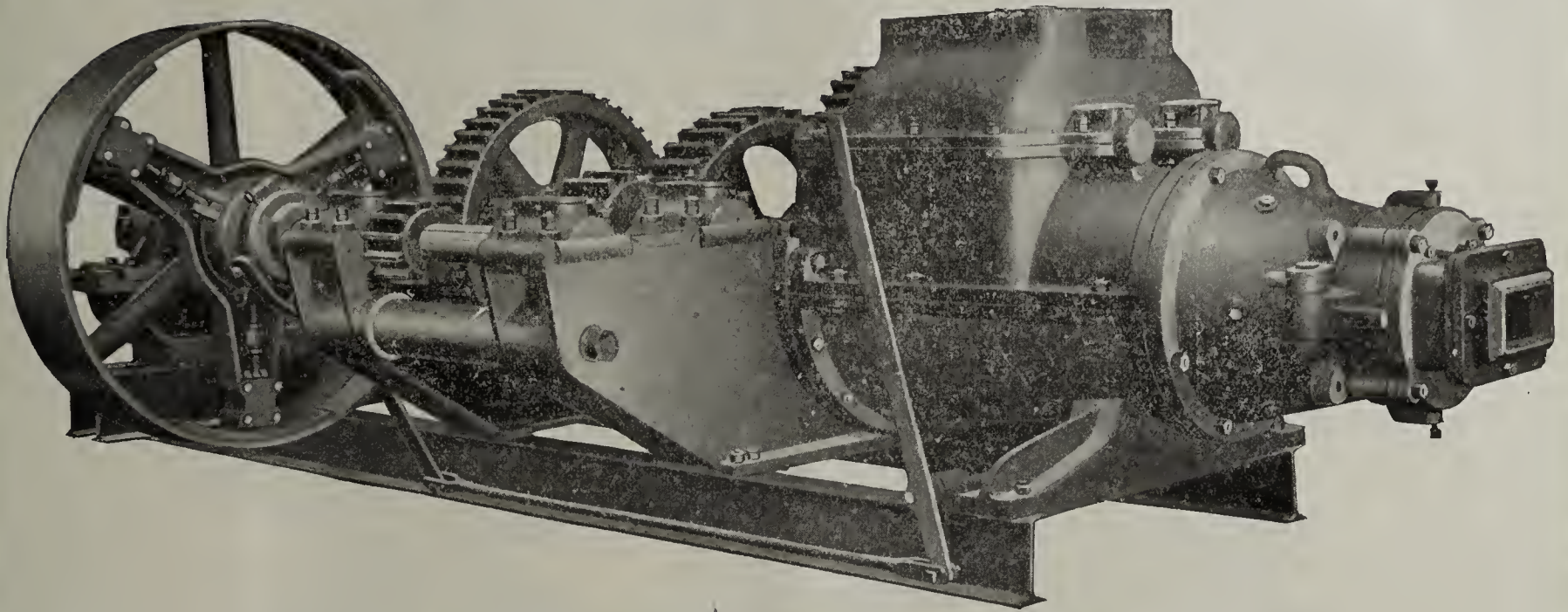
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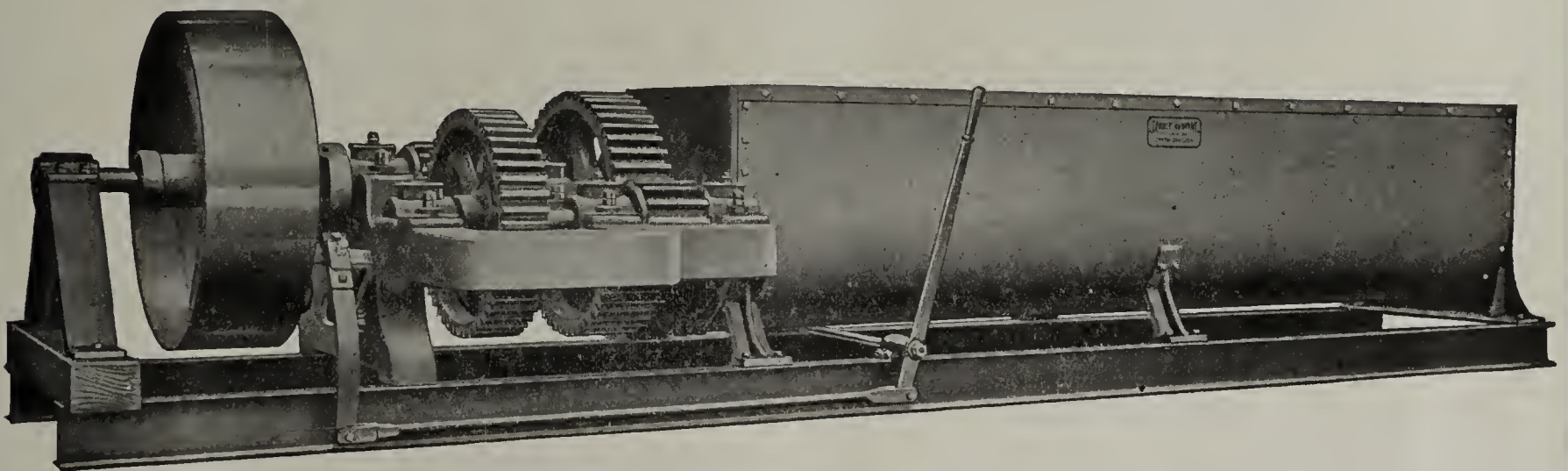
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Modern Brick Machinery



NO. 9 AUGER BRICK MACHINE

Capacity 50,000 to 70,000. The Machine for Difficult Clays. Heavy Shafts - Steel Gears - Accessibility



12 Ft DOUBLE GEARED PUG MILL TYPE "C"

Heavy Shafts and Large Faced Gears

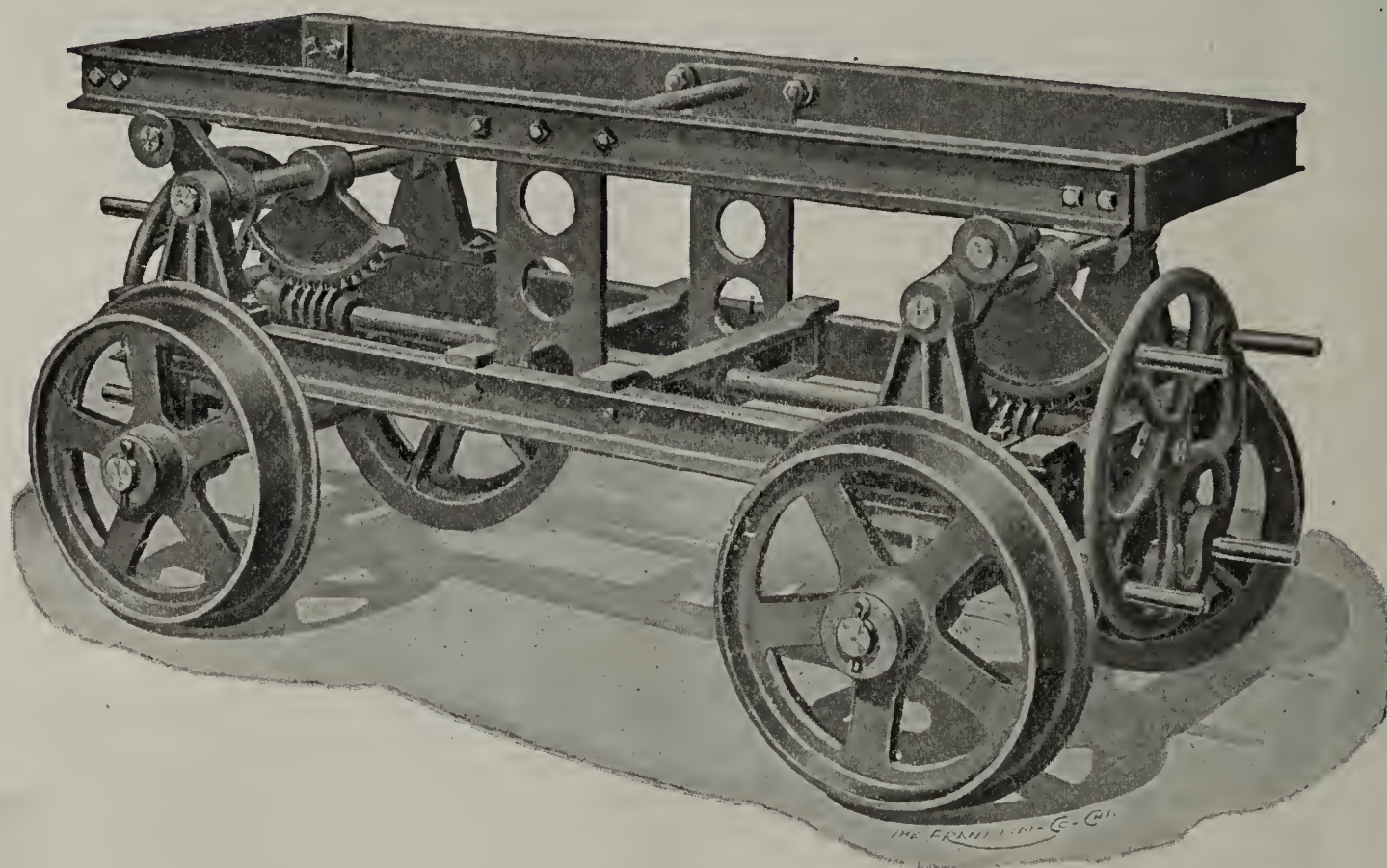
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The **BONNOT COMPANY**
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THE GUILDER

ELEVATING and LOWERING BRICK CAR

FOR OPEN AIR SYSTEM OF DRYING



Strong and servicable. Easy to handle. Operated from either end. All iron and steel. Raised and lowered by worm gear and segment. The most perfect car of its kind made. We will furnish the **Guilder Elevating and Lowering Car** with the necessary transfer cars and turn table at a reasonable price and send you all the plans for an open air system of drying without additional cost.

Write us in regard to this car and also let us tell you all about the "**PREMIER**" line of Clay-Working Machinery.

The J. D. Fate Company
PLYMOUTH, OHIO



Vol. XXX. No. 9.

CHICAGO, MAY 15, 1907.

Semi-Monthly, \$1.00 per Year
Single Copies, - 10 Cent.

A paper read before the Twenty-first Annual Convention of the National Brick Manufacturers' Association of the United States of America, St. Louis, February 4-9, 1907.

THE OCCURRENCE AND PREPARATION OF WHITE BURNING CLAYS.

By Prof. Edward Orton, Ohio State University.

Prof. Edward Orton, Jr., of the Ohio State University, gave an interesting lecture on the above topic Wednesday evening. Prof. Orton first traced the origin of clay matter on the surface of the earth, showing that it was due principally to the action of water and air on the rocks composing the primitive crust of the earth. The very great contrast existing between the condition and chemical composition and temperature of the atmosphere at the earth's surface in early time and that existing now lead us to believe that rock decay must have progressed with a rapidity and on a scale with which we are not now familiar. The sum of these alterative changes, which began vigorously when water in liquid form was able to remain on the rocky surface of the earth, and which have been decreasing in activity as the ages have come and gone, is now represented by a vast coating of clayey matter covering the earth like a blanket, through which the unweathered rocks project in places in the forms of hills and mountains.

While all clays are formed by this process, some of them remain for a long time in the position in which they were formed, *i. e.*, in contact with the rocks with which they have weathered. Such clays are called primary clays, but the vast majority of clay matter is soon moved from its place of formation through the agency of the rains, the frosts, the snows, the streams, the glaciers, in fact, through moving water or moving ice, or moving air, and when again the particles come to a temporary rest, they have become widely scattered and mixed. Such clays are called secondary, for they are no longer first hand products but consist of blends or mixtures of powdered rocks coming from large areas and from rocks of many different ages and kinds.

The speaker then stated that the subject under discussion had been printed under the title of *high-grade* clays, and that this title was somewhat misleading, for there were many

kinds of high-grade clays, and that a clay might be high-grade for one purpose, and not so for another. He stated that the clays which command the largest price in the markets are the white-burning clays, such as are used for pottery and decorative purposes, and it was of this group only that he desired to speak.

The next point made was that white-burning clays are very largely found in the primary class, because the whiteness of clays and most other rocks depends on the absence of nature's great coloring material, iron, and where a mass of white rock, low in iron, is found, it is generally found that the clay which it produces by weathering is also white or light colored. But, as white rocks are not very common, white clays are also uncommon, for one is dependent on the other.

The amount of primary clay was shown to be comparatively small, and of this primary clay, the amount of white-burning material was shown to be an insignificant portion, so that the amount of white-burning clays in existence form but a drop in the bucket compared to the vast mass of clay matter which is colored red or yellow. But, because the white clays are rare, they are valuable, man being so constituted that whatever is unusual is desirable. White clays are intrinsically much less beautiful than the delicate reds, buffs and grays, which natural clays produce, but because they are difficult to obtain they are valued.

The speaker next showed that the resources of America in white clays are good, compared to the other countries of the world, and that most of them come from the formation of old rocks called the Archaean. These Archaean rocks are not believed to be the original crust of the earth, but are thought to be the first sediments produced by the weathering of the original crust, which sediments have been greatly modified or metamorphosed by the tremendous changes which the earth's crust has undergone since that dimly distant period.

The earth's crust has been contracting, wrinkling up into mountain chains, cracking, and letting hot floods of rock flow out over the surface. It has been leached by superheated water, dissolving materials in one place and precipi-

tating them in another. It has been buried under miles of sediments giving rise to great pressure. All of these agencies have been operating for untold aeons on these earliest sedimentary rocks, and have so altered them that we can no longer prove definitely what their real origin was. Whatever it was, the Archaean rocks are important to us now, because they contain so much mineral wealth, not only in the form of ores of the rare and baser metals, but also in the marble, slate, granite, graphite, feldspar and kaolin which they produce.

Danan's map of the Archaean rocks of North America was then shown on the screen, and the slender thread of land running down from northeast to southwest along the general course of the Appalachian mountain chain was pointed out as the principal source of the kaolin bearing rocks of America. The crumpled and twisted nature of the schists which compose the bulk of the Archaean rocks was next shown by views of pieces of the rock in its hard condition, and by embankments of it in railroad cuts, where the rock had weathered sufficiently to be dug by steam shovels.

A typical occurrence of primary kaolin at Dillsboro, N. C., the property of the Harris Clay Company, was next carefully illustrated. The views shown illustrated a cross-section of the mountain in which the clay formation is seen; then a diagram illustrating the mode of working it; then photographs showing the pits in operation and pictures taken at the bottom of the pits showing how the clay is dug and removed, and how the treacherous walls are kept from caving in upon the pit-men. Another picture showed the red clay walls between which the white kaolin vein is found.

The washing or preparation of the kaolin, when once dug, is a task which involves much originality, because no two kaolins are alike and the apparatus required in one case is apt to be unsuccessful in another. Mr. Harris, the proprietor of this plant, has developed a most interesting procedure for separating the kaolin from the comparatively coarse sand and mica which compose the bulk of the gangue material at this point. No one who looked at the ashy-gray material that comes out at the top of the pit could believe that a beautifully white product could be obtained from it.

The method of this purification was explained on screen by diagrams and photographs, step by step. In general, the process is one of floating the light particles of kaolin out from the heavier particles of quartz and mica, by passing the liquid through long troughs in which the liquid flowed at slower and slower speed; but this method is supplemented by apparatus to disintegrate the kaolin, and get it into suspension in the liquid, and sand wheels for getting rid of the coarsest portions of other minerals, before the liquid passes on to the troughs.

The speaker then showed the relation between primary and secondary kaolins, and how the latter had been produced from the former by the same kind of a washing process as that described and illustrated in the preceding views, and also showed that in this case nature furnished the water process—the rivers and streams acting as the disintegrators, while lakes and oceans formed the settling tanks. The wonder of it all is how a white clay can possibly be carried

for great distances and escape contamination by the red-burning clays which are everywhere so much more abundant. For this reason, white-burning secondary clays are rarer, geologically, than the primary ones, though the beds in which they occur are often of considerable extent, and the amount of kaolin which they contain is sometimes very large.

Referring to the map once more, the speaker showed that the Archaean area of Georgia, North and South Carolina and Virginia was bordered by a wide expanse of level country, or coastal plain, which geologists tell us had been built out of the sands, clays and waste materials produced by the decay and erosion of this same Archaean area. Curiously enough, in these sedimentary beds are found areas of white secondary kaolins, three hundred miles distant from the Archaean rocks, from which they must have been formed. Speculations on the origin of these beds are very unsatisfactory, for it seems difficult to imagine any set of conditions which can have produced such great quantities of unstained material, surrounded above and below by red clays and separated by such great distances from the white parent rock.

However, the fact remains: *the clays are there*. No one accurately knows yet how large an area of Florida is covered by this white formation, but the two deposits now working are fifty miles apart, and there are many stories current in that vicinity that the white clay can be reached almost anywhere that one goes down. Both workings are located where the clay is comparatively close to the surface, and the beds are found to be from 25 feet to considerably greater thicknesses; the bottom has not been definitely reached in one of the beds. In both places, the soil is full of water and the clay can not be dug to any depth without encountering the water problem in severe form. At one of the places the workmen only go as low as can be conveniently drained with large centrifugal pumps. Much of the kaolin, however, lies below this level, and this, of course, is not being now recovered. In the other plant, a novel process of dredging the kaolin from beneath water level has been devised by Mr. Charles Edgar, and the water has been made an actual assistance in place of a hindrance to the winning of the material.

* Both of these beds consist of a white sandy material containing from 60 to 80 per cent of white sand, and the balance kaolin. The processes of separation of the sand and the kaolin are somewhat different in each plant; in fact, the fineness in grain of the clay substance, and the attendant sand particles, seems to vary in the two beds, so that the treatment given by one would be unsatisfactory to the other.

Pictures were used freely in showing the equipment of both of these plants for producing the kaolin slip, and the sand separators, the trough system, the settling tanks, the filter presses and the dry houses. More than thirty views were used in illustrating this interesting stage of the work.

The two Florida deposits having been thoroughly discussed, a third deposit of sedimentary kaolin, differing widely from either of the others, was next discussed. The plant illustrated was that of the Georgia Kaolin Company,

at Dry Branch, near Macon, Ga. The origin of this bed seems to be different, in the fact that it lies almost on the line of juncture of the Archaean rocks which produced it and the flat sedimentary rocks of the coastal plain. Where these two unlike formations come together, which geologists call the Fall line, there occurs a band of clays, many of which seem to be of considerable commercial promise. Curiously enough, however, these clays are not as white as the kaolins, three hundred miles south in Florida. One would think that, from the fact that they lie close to their place of formation, they would have encountered less danger of staining. One would also expect them to be coarser grained and full of sandy minerals, while the exact reverse is the case. The bed at the point inspected was about 30 feet and the clay is quarried out in lumps, which have been marketed for years past with absolutely no mechanical preparation other than drying and occasionally crushing to facilitate filling into sacks for shipment.

The pictures illustrating this plant showed the clay pit, with the black men digging and wheeling out the beautiful white lumps, and also showed the nature of the overburden which has to be removed here to a maximum depth of 35 feet. A unique device, called the tail rope scraper system has been installed. The details of this plan were thrown on the screen. The system has many advantages over the steam shovel. The lesson should have some practical value to brickmakers who have heavy stripping to remove.

At the conclusion of the lecture, the screen was covered by a beautiful colored mountain scene of lakes, forests and snow-capped peaks, and while the audience feasted their eyes on this beautiful sight, the lecturer brought his remarks to a close with the following:

"And thus ends the story of the white clay—prosaic and commonplace enough, no doubt, to him who looks at it from a material standpoint. To him it is interesting because it sells for \$12 a ton. In the language of Wordsworth:

"A primrose by a river's brim,
A yellow primrose was to him
And it was nothing more!"

"But let your imagination have some play—let the searchlight of geology help you to read the dark pages of its history, and this simple lump of white clay can tell you a story more fascinating than the siege of Troy, or the loves of Romeo and Juliet. Around it is woven the wondrous history of our beautiful earth. It takes us back to the days before the human animal had made his humble entrance into Nature's zoological collection—back to the days when land and seas teemed with animal and vegetable life, now utterly perished and gone; still back, when continents were young, when our lovely earth was a fiery ball, surrounded by atmospheres as dense and reeking as the discharge of one of the monstrous weapons which now defend our coasts. And though the purpose of this white clay now may be merely to stiffen and polish the surface of your morning paper, or to fashion the crude mug out of which you take your coffee at your hasty noon-day lunch, do not forget that it may also be the vehicle by which some future Wedgewood may fashion one of those triumphs of art before which people stand silent and dewy-eyed."

DISCUSSION ON PROPER MIXTURES AND MIXING FOR MAKING SAND-LIME BRICK*

Mr. Bovy: This works back into the subject discussed yesterday. We had up the matter of siloing only that portion of the sand which has been ground and considered the mixture of all the lime with such proportion of the sand. I would like a little more light on the subject.

Mr. Ebert: A sand when it is used wet from the bank is mixed with hydrated lime, no silo.

Mr. Duerr: Our silo material is only a portion of the sand and all of the lime, and the material is hydrated in going through the silo, so that it ages perfectly dry, comes in a dry state from the silo, and then is added to the sand just before it goes to the press; the sand being moist, (by moist I mean an average of 8 or 10 per cent water), because if the sand has more than 8 or 10 per cent moisture your mixture would be too wet, even for the press. I have not seen any sand that came from the bank or bar that had more than 10 per cent moisture. There seems to be no difficulty in getting a perfect mix. I have not seen any difficulty in mixing the two materials. I do believe, however, that if your material was moist, even 3 per cent of excess moisture in your silo material, you would have difficulty in mixing it.

Mr. Jackson: I agree with Mr. Duerr regarding some of his experience with mixing. I am an advocate of taking the sand, providing you can find it the right texture, direct from the bank, mixing it with the hydrated lime and pressing in into the brick with as short and simple a process as can be done. There are instances where the sand is too coarse or contains foreign matter that you have to dry your material or prepare it. That adds to the cost of brick, in order to dry your sand, screen it, or remove the vegetable matter. It costs fuel and additional power. That moisture has to be put back in the brick. At our plant in Saginaw we are making 120,000 brick every week. We take our sand right from the pit; and within fifteen minutes from the time the sand is taken from the pit, we have the brick on the car ready to harden.

Mr. Cleary: We take the sand right from the bank, hydrate our lime, mix it with the sand. We are now turning out 43,000 brick a day. We made 2,500,000 brick at the end of the first month, and we are away behind with our orders. As to tests our brick stood 6,000 to 7,000 pounds. Our brick right from the hardening cylinder stand a compression of about 67,000 pounds.

Mr. Bovy: What style of mixer do you use?

Mr. Cleary: Double shaft differential, running at two different speeds.

Mr. Bovy: If there is nothing further I would like to broach the subject of dryers.

Mr. Duerr: The dryer question was thoroughly gone into at last year's meeting, I think if you will take up last year's report you will find the subject pretty thoroughly discussed. I would like to know if anyone can give us figures as to the expense a ton of drying sand with a steam

*Read at the last meeting of the National Association of Manufacturers of Sand-lime Products, recently held in Chicago. The article which preceded this discussion appeared in April 30th issue of Clay Record.

dryer. I believe our president is competent to give some information on the subject.

The President: Mr. Duerr knows very well that I can not give him what he has asked for. We can't tell the cost a ton of sand with a steam dryer. All the sand we can use from now till May 15 is stored under cover so that it will air dry to a great extent. Some of our Oswego river sand can not be dried in a steam dryer, and we are putting in a direct heat machine. At our Paragon plant the sand worked satisfactorily with a steam dryer. At our Buffalo plant our steam dryer is quite satisfactory. All that is wanted of the steam dryer is to get the sand dry enough to make it run freely.

Mr. Isenberg: I am sorry to have to say anything of our experience with steam dryers. We were unable to get a sufficient quantity of sand through the dryer to run half a day, but such as did come through was entirely satisfactory. We resorted to all kinds of innovations with the same result.

Mr. Van Glahn: The trouble with the dryer the gentleman has just mentioned is the lack of air. He had got heat, but you can not dry sand without air. His trouble is occasioned by the improper construction of the dryer.

Mr. Simpson: This gentleman has stolen my thunder. It is all in the construction of the dryer. There are lots of people who do not know how to construct a steam sand dryer. I am an advocate of the steam dryer. Mr. Bostwick here is the foreman of the United States Brick Corporation, of Michigan City, Ind., and they use a steam dryer. In summer time they use the exhaust steam which would otherwise be thrown away, because the exhaust steam goes through the heater first and heats the pipe before it goes to the dryer and they use no live steam. Now what does that dryer cost? No live steam is utilized in drying the sand, the only cost there is (because there is no manual labor) is the amount of power that the fan takes. They are making 16,000 or 17,000 brick a day, and they tell me this steam dryer will give them as much sand as they need bone dry as is applicable to a tube mill. The mere fact of piling sand on the pipes is not going to dry it, you have got to get air through it.

Mr. Straight: I have had a great many years' experience in building dryers, and I will say that it is impossible to dry sand with steam heat, or any other, without having dry air in circulation. Take your dry air, pass it through the heated sand and out of the other end of the dryer, and you will have dry material. I agree with Mr. Van Glahn that not everybody knows how to build a steam dryer.

Mr. Van Glahn: We can regulate the moisture in our steam dryer in any way we choose. We put in a low pressure valve so that we can retain such percentage of moisture as we wish, and this can not be done with any rotary dryer.

Mr. Whetstone: We installed a dryer on the plans furnished by Mr. Simpson, and at the cost of one ton of coal for 10 hours we dry without any trouble 40 to 50 tons of sand. What the capacity of that dryer might have been I don't know; for we never had occasion to make any capacity test of our plant; but we do know that we tested up to

the limit of capacity of our press every ten hours, with a consumption of about one ton of coal. Our sand shows moisture to about an average of $5\frac{1}{2}$ to 6 per cent.

Mr. Duerr: There is no economy shown in that statement. You have exaporated three tons of water with one ton of coal. Any direct heat dryer will guarantee an economy of one to eight.

Mr. King: We use a rotary dryer and dry from 55 to 60 tons of sand a day on one ton of coal costing \$1.85 a ton. We have never had any trouble at all.

Mr. Simpson: I don't advocate the steam dryer under all conditions. If there is any loam in the sand it is apt to stick to the pipes, and that is one limitation to the steam dryer. I have not been able to get the exact cost of running the steam dryer, but I think you will admit that 2,400 to 2,500 pounds of coal is a very small amount to use in a plant making 16,000 or 17,000 brick a day, drying all the sand and using a tube mill.

Mr. Berg: A rotary dryer about 25 feet long working with direct heat in conjunction with an exhaust fan can be built very cheaply to use the exhaust steam.

Mr. Duerr: I made some figures a couple of years ago on what the heat would do that we got from a cylinder, and I find that it will not pay for carrying the sand back and forth. I think there should not be any heat coming from the cylinder. If the cylinder was properly insulated that would give the greatest economy. It is surprising how much coal some of us are burning up because we are not covering our cylinders.

L. W. Penfield: I would like to ask if any of the sand-lime brick makers who are using two or more hardening cylinders ever followed the practice of steam connecting them so that they could take pressure from one cylinder to another.

Mr. Straight: We have two cylinders and empty from one into the other, but our experience has been that it is not practical to do that.

Mr. Duerr: We have three cylinders and have them connected so that we can discharge the steam from one cylinder into the other. I am inclined to agree with Mr. Straight, although when we are working two shifts night and day and the opportunity comes where we can help out one cylinder by taking the steam from the other, the economy is considerable.

Mr. Bovy: Has anybody ever made any experiment along the line of drying sand by mixing the sand with crushed lime and letting the lime take the moisture out of the sand for its own slacking?

The President: Mr. Tucker told us about that last year. He advanced the theory that it was useless to dry your sand, and hydrate your lime separately, when you could get nature to perform the act for you by simply combining the two and having the hydration take place in the silo.

Mr. Johnson: We take the sand from the hill in its natural state and mix it with the ground-up lime in the mixer, from there it goes into the silo where it becomes absolutely dry.

We find there is plenty of moisture in the sand before it goes into the silo. In the fall and winter time we use dry steam together with water.

CLAY AND ITS RELATIONS TO THE DEVELOPMENT OF BANGOR*

By Patrick H. Dunn, Bangor, Maine.

Words of mine would fail to express to you the deep feelings of appreciation which arises within me at this time and upon this occasion. The honor which you have bestowed upon me is something more than I ever expected or deserved, for I feel that to address a body of intelligent men is one thing, and to presume to instruct them is another, which places the novice in a peculiar position of attempting to instruct his own instructor. You have given to me this honor, which I hope I may be worthy of, and anything that I may say or do during this, my first effort, I assure you gentlemen is from the purest motive and with the desire to promote the interests and welfare of every citizen in Bangor, now or those who may seek shelter among us in the future.

The subject assigned to me for this evening is Clay and Its Relation to the Future Development of Bangor. The subject is so broad, so far-reaching and inexhaustible in its nature that for me, an humble citizen, to presume to handle it with any degree of proficiency would be unreasonable. It is a subject that from the earliest history of man, next to the winning of bread, is one of the most important, for it deals with the construction of the shelter of the human race.

Away back in the early history of civilization it was so considered, as the monuments which have preserved the memory of the characters of races of men thousands of years dead will testify, being preserved in the burnt brick structures now being unearthed, whose architectural design outrival in grandeur the buildings of modern times.

But not to go into the dark age to fortify myself upon this point, I will speak of conditions as they exist and events which have taken place here and elsewhere during the scope of my own short memory.

Perhaps some of you have been reading articles in the local papers in the past regarding Bangor "sidetracked." And it may have given you alarm. The question of who is to blame, if blame there be, is debatable ground, so I leave it; but if the stories be true regarding the feasibility of the creation of unlimited power to that developed by the inflow of the Penobscot river to Pushaw lake, thence down the valley through the hundreds of pen stocks at Bangor, then the plausibility of developing the clay industry sufficient to increase the population to wonderful proportions is not only probable but of natural consequence, for the clay deposit in the immediate vicinity is of the finest grade on earth for the manufacture of bricks, paving blocks, drain tile, pottery and terra cotta lumber.

The gray bar clay properly handled when burnt, produces a cherry red color, or it can be burned to pigeon blue or a dark chestnut, which is regulated by the different degrees of heat which, when the wall is not only fireproof, but weather proof as well. Unlike some of the southern or

western article, they will not soak water and are therefore frost proof, giving to them the power to resist even time itself. As an example to substantiate this statement I recall to mind the days of the Charleston, South Carolina, earthquake, when, through that upheaval of the earth's surface buildings of modern architecture were tottering, and had fallen to the ground, it was the brick structures that remained as monuments to prove the superior fitness as a building material. (The same may be said of San Francisco.) Many of these buildings came from common handmade bricks, of the clay that was dug from the hills in Penobscot river valley, and were known to Charleston contractors as the Bangor brick, even in those days. At that time men from all over the world flocked to the aid of the reconstructionist, and the Bangor brick makers found their way to act as superintendents in Charleston brick yards. Two Bangor men (natives of Brewer), experts in the art of tempering, moulding and burning clay, while thus engaged read the name "Stodard & Hellier, Bangor," on the brick in the pavement in the streets of that city. These men, attracted by this memento of their native place, made a passing remark to a bystander, who promptly said, "Yes! those bricks came from Bangor, Maine. Bangor bricks beat anything in the world; they are not only easy for the masons to cut to suit whatever occasion calls for, but they are waterproof, and fireproof as well," he said. "We have put them to a test which is perhaps the most rigid of any that can be made; you see we boil the bricks in water then in hot tar, in order that they may be used in ornamental work, which makes them adhere closely to each other in paving work as well. We have tested some of the Philadelphia bricks, New York bricks, and others, some of which would soak water clear through to the core, but the Bangor bricks, even under a twenty-four-hour test, would not allow the water or tar to penetrate a sixteenth of an inch beneath its surface." The gentleman then went on to tell of other tests, pointing out buildings in the city, some beautiful structures laid in white mortar with red, flush faces; others where a coating of cement would completely cover the face of the bricks, hiding them from view. "There," said he, pointing his finger, "those bricks that are not ashamed of their faces are Bangor bricks; the others from other parts of the country." And right here, gentlemen, it may be said, that to the Bangor brickmaker who walks through the city and looks at buildings of modern design, when he is confronted with a foreign building material no better than his own and of different color from that which nature intended should be used, it causes him to blush. I would not presume to decry the value of this foreign material were the local product receiving the proper consideration from men who have power, and an equal chance for competition in the home market, not to speak of the possibilities of again getting back our foreign trade.

When you go along the streets, compare some of the buildings which I will mention, and see whether or not there is room for a controversy. The front of the Bangor Opera House is composed of foreign brick, with exception of a few repressed ones which came from Brewer. It is

* An instructive address delivered by Mr. Dunn at a recent smoke-talk of the Board of Trade. The same facts and conditions exist in hundreds of cities throughout the United States.

something like thirty years ago they landed here, as at a cost of forty dollars per thousand; then look at the McGuire block on the opposite side of the street; then look at the buildings in the immediate vicinity of the Opera House where you can notice the ordinary Bangor-made brick front. I leave it to your own judgment to say which is the best brick and the prettiest wall. The bricks in the block two doors below were delivered on the spot at six dollars per thousand.

I now ask you to compare the design of the Bangor city hall, Penobscot county courthouse, the Nichol's block, on Main street, the First National Bank block on Exchange street; compare them with any structure of modern times within the county or state. Red bricks, granite finish are Bangor products; they tell the story plainer than I can. Let any man look at the Farrar house, now owned by the Merrill family, on Union street; there he will see the Bangor brick side by side with a foreign contemporary. A portion of those bricks came from Lancashire, England, while another portion came from Brewer, where they were made, repressed and burned to compare with the color of the foreign product. The brickmaker will observe that the eye of an expert sorted and matched the colors. It would be difficult for any one to find the slightest variation. This alone, if nothing else, pays its tribute to the Brewer brickmaker.

Take a walk with me up Broadway, in our own city; look at the residences there; then look at the churches of the different denominations which grew in the days when our state was known as the "Pine Tree" State, and Bangor on the tidewaters of the Penobscot was the largest pine lumber export market in the whole world. On your walk with me you will notice the buildings which were erected in the days when the pine was in its glory. Were they built of pine, spruce, hemlock, or cedar; were they built of foreign clay? No! they were built from the home product, the bricks hand made—Bangor clay—and there they stand today, as they may stand when centuries are past, models of architecture, defying time itself and smiling at the errors of modern builders. They are telling a tale of a race of men who have passed away, but whose knowledge as to the value of the natural resources of our state was far-reaching and superior to that of men of today.

You may start out of the city of Bangor in any direction you choose; if it is summer time, you may take note of the foliage of the various plants which you are passing, which tell the tale to the expert chemist of the elements which are hidden beneath the surface. The inexperienced man can pass and repass and see no indications pointing to a valuable deposit, but the eye of the clay worker is attracted on every side with the marvelous deposit over which he is passing.

In other states, in other communities, men of wealth, refinement and education have spent many long, weary days prospecting in search of a suitable deposit for the manufacture of bricks and pottery, sometimes with bad results.

But the great trouble with Bangor has been that so many gifts have been bestowed upon it by the Creator that its citizens, blinded by their false education, could not conceive the true value of its position from a geological standpoint.

Only last week at a meeting of the newspaper associations of the United States a paper was read by some distinguished gentleman sounding an alarm. He said: "In twenty-five years hence the entire spruce suitable for paper in the United States will be consumed." He gave what purported to be facts and figures which bore out his statement, and which I am ready to accept. The thought is worthy of consideration of our greatest minds. How many men are there in the city of Bangor who are aware of the fact that the commercial portion of the city of Boston is largely composed of brick manufactured in the vicinity of Bangor. Philadelphia, before it became famous as a brick centre, had part of its training in brick burning from instructors sent from the mud yards of Brewer. The state of Colorado at the time of the Leadville boom received some of its beautiful brick fronts through the efforts of gold and silver hunting brickmakers from Bangor, who had found their way into the new country.

At the time of the St. John (N. H.) fire, some thirty years ago, it was Bangor bricks which played a most prominent part in rebuilding of the city, and today those rose fronts stand out on her principal streets, outshining in splendor anything that can be seen. St. John, New Foundland, cities even along the Mediterranean, even South Africa, all have their red-faced fronts composed of bricks made and thoroughly burnt in Penobscot river valley. London itself, not to speak of New York, Baltimore, or even New Jersey cities, have our Bangor bricks in their composition.

The hero of Little Round Top, in his early days made mud cakes in the Brewer brick yard, and today in the city of New York we have a sculptor from Brewer competing with the greatest sculptors of modern time. He made his first attempt as a sculptor working in the clay of a Brewer brick yard. With all of these things before us, why is it, then, that today the citizens who should have a knowledge of this glorious heritage are blinded by the existence of power which forces them to uphold the works of a stranger rather than to encourage the efforts of their own people? Wonderful things may be said of the Bangor brick and the part it has played and ought to play in the shelter of the human race. Still more wonderful things could be said of her brickmakers, who received their first inspiration of knowledge in the brick yard with their bare foot in the hot summer sun, from honest foreigners, who were supposed by the local citizens to be ignorant men simply because they were poor. How many men realize that some of the greatest expert burners of clay have received their training here, and without notoriety, newspaper advertising, political influence, or anything of the kind have gone forth into the world to take charge of brick enterprises, where capital was more willing to co-operate with muscle and brain, than here at home.

Look at the Union grammar school building, the Palm-street school building and many others that I could mention, made by Bangor contractors with Bangor material, and then come down town and let me show you some of the new ones made by imported contractors of imported brick by imported labor; reason for yourself.

Take the Coe block, there is a red face side of it, its equal if not its superior. Then take the Merchants' National Bank block, the Stetson block on Exchange street, the new Graham block now under process of construction, the Merrill Trust Co.'s block; compare any of them with ones I have mentioned, and then look at the Stearns block, the Morse-Oliver building, and I ask you to judge whether your red clay bricks as they are presented here in their crudest form and having the disadvantage of being handled at a remarkably low cost, do they or do they not outshine such buildings as the ones I have herein mentioned? I will include the Bass building, with its white face, looking over at the Coe block. Who knows what those brick cost the owner? While they were being placed in the wall the finest expert brickmakers, natives of Bangor and vicinity, were being employed, teaching the citizens of the south and west the art of making bricks, while the owner of the building itself owned and still owns a clay bank which properly handled would produce a superior quality bricks, at a saving of expense and perhaps could retain within the limits of the city, at least, a few of the intelligent working men who are obliged to seek other fields for want of employment.

It seems to be a very general and growing opinion that Bangor does not offer a proper amount of encouragement to its own young men. Its system of education, from the highest profession to the lowest, seems to have a tendency to discourage rather than encourage any industry that might see fit to ask for recognition within its limits. Now then, let that be as it may, let bygones be bygones. Time has arrived, Bangor must assert itself in more ways than one. And if her citizens do not see fit to take hold and encourage they may in time be obliged to look on at the progressiveness of the citizens of other countries who are fast becoming aware of our hidden treasures, and will set us up just over a little to one side where we will wonder how, when and what wind blew this about.

The great railroad propositions which are being encouraged throughout the country, the marvelous development of the interior of our country, the opening up of the great timber fields of the north, the acknowledged congestion of the large business centers, the innumerable railroad wrecks, denoting the inefficiency of the railroads to take care of the present traffic, and the clamor by these gigantic enterprises to gain open ports to the sea will no doubt increase the population in the State of Maine. It may sidetrack Bangor, but it never can deprive it of these rich deposits of clay and other products which in time will be brought to bear to assist in the manufacture of our fireproof building material.

This clay bed, beginning on the north of the city is continuous to the bank of the river, extending a distance of thirty miles or more, and God knows how deep it goes into the ground, but the deeper it goes the better it is, and the more uses can be made of it.

Not only is it suitable for construction material, but the blue clay spread upon worthless land can be made to produce clover equal in quality to the results of the same amount of any commercial phosphate, now being introduced from foreign countries. It also can be made into a paint

which is as indestructible by the elements of nature as is the time honored brick. To be sure it is natural that the value of this deposit should be hidden by men who are interested in deposits and in enterprises in other sections of the country.

For instance: We have a deposit close to the Herman line, of Potter's clay, this having been experimented on by experts, has been found suitable for making ware that will take the glaze readily. And it might here be said regarding glazes, that some of the experiments made on enamel bricks in Brewer last year are satisfactory.

What Bangor wants first is knowledge of its power, it wants every boy and girl within its limits to know that there is a chance for them to develop here at home. It wants the business men to throw off the narrow mindedness which has characterized it in the past, and to unite in their efforts the uplifting of the city. There is clay enough, there is muscle enough, sand, water and brains enough, and if these ingredients are properly mixed, I have no fear for the future of Bangor.

The new Maine Central station at the foot of Exchange street, from the point of architectural design, may be termed unsurpassable. But note what an old time brickmaker told me! He said that the bricks in that building cost \$40 per thousand, f. o. b.; that they were composed of New Jersey clay, which, was shipped to Boston, and there made into bricks and burned, then sorted and shipped here. The enamel bricks, he said, used on the interior were delivered at a cost of \$85 per thousand. The sandstone came from some other remote part of the universe, while the red slate making its contrast with the blue of the sky, was also of foreign product. I do not know who the architect was, nor do I propose to criticise him nor anybody, but I have this to say: If he did not know about the Bangor clay bank for bricks, the Monson and Brownville slate quarries for slate, and the Dedham, Lincoln, Hernan and Waldo granite quarries for trimmings, he certainly was not educated in the time defying indestructible building material, whose home is here, and which had the first right to be considered. If he was a native of some other state he surely deserves credit for being more loyal to the land of his choice than are our own people, who, knowing the truth, ask and receive franchises of the community in which they thrive and then fail to appreciate the wonderful value of the soil that bears them.

One of the peculiarities of the Bangor clay is that God Almighty mixed it. It needs no pugging machine, no rock crushers, scarcely anything but capital and the muscle to remove it into the many thousand blocks which may be desired. There is plenty of wood and water and power, it extends from the railroads to tidewater, so that if the output were large it would have the advantage of an outlet to the world by sea as well as by rail.

It may seem to some short-sighted person that the establishment of a brick plant in the vicinity upon a very large scale might have a tendency to weaken present manfactories. But that is not the case. The people of the whole world must be again schooled to the Bangor brick and clay product for building purposes. The effect during the past few

years has been that the manufactories being few and small, made no attempt to keep up anywhere near to the demand for the output, so that contractors figuring upon the construction work of large enterprises, of necessity were obliged to take for the basis the product of some other place.

Last year alone, millions of bricks passed through Bangor towards the east, from the west, some to be used in construction work at the new pulp mill at Sprague's Falls, Washington county. The entire product of the Orland yards, after the Bangor supply had been exhausted, was transported in schooners across the bay, there to be unloaded, reloaded again to be used in the Milo and Millinocket enterprises, and strange to say like carrying coals to Newcastle, foreign bricks were dumped upon the wharves in Bangor and Brewer to be rehandled and shipped to the north and the east of us, while some of our Bangor buildings were being made of the cheapest refuge scoot lumber, with a sheet iron imitation of the Bangor brick, to hide the defect, and this in plain sight of everybody.

All the brickyards in Maine this year, if running at full capacity, will not be able to make one-tenth part of the amount of brick which ought to be used in the state of Maine alone, for the building of homes.

The construction of the Allegash railroad will open up new fields, new towns and cities which will need building material, and they should all be made of Bangor brick.

We have an agricultural college which is receiving from the State annually a sum of money intended to promote the inspiration which was born in the heart of a laboring man. No man should ever attempt to take from it anything; she has suffered enough; she should be encouraged that she may send forth the message to future generations, tidings of the truth hidden beneath the surface of the earth. This institution with all its branches at present, is able to teach the farmer the wonders of the chemical properties of the soil which is to constitute its future crop. It can teach the civil engineer, and train the student in technical law; it can teach forestry now after its own valuable timber lands have been devastated, by men who feared a universal education and have retarded the progress of civilization and honest government. But until its faculty and the people in general actually wake up to the meaning of its creation, which existed in the heart of its inceptor, and delve deeper than the surface into matters of international importance, then it can never hope to reach the goal allotted to it by the creator of the moral act that gave it birth.

The city of Bangor, located as it is in the center of this marvellous deposit should have a school established that would teach its children the chemical properties of the clay upon which it rests, and its relation and its comparison with other clays; its capacity, endurance and fitness for home building purposes. Every boy and girl should be taught in their mud cake age what the cake is composed of and what valuable ware could be made of it.

But the question might here be asked, "Whose business is it what we make on buildings, or of what materials we use? Do we not own the money we use?" The answer is this: It is the duty of every man to defend his home first and to promote its interest; second, the town he lives in; third, the

county, or state or nation under which he lives and is permitted to accumulate his fortune.

Metropolitan centers are not caused by accident, but by some natural gift that God has bestowed for a purpose to a particular locality. Sometimes the breezes blow for centuries over a favored spot, nature being left unmolested; the heedless traveler may pause to take a view of the surrounding scenery and not conceive the possibilities which were intended by the designer of the picture. But again, a more inquisitive traveler lingers, pauses, studies and considers; and behold, even though he die, the thought lives; the city grows and the change is upon the face of the land. So it is with Bangor; she has slumbered, she must wake for she has been discovered.

These natural resources must be developed, and instead of the white faced structures of the foreign material which meets the traveler, through her streets, the fresh red face of the Bangor home-made brick with its terra cotta lumber as its partner, will not only adorn this city, but the principal cities throughout the world.

Enough has been said in the past regarding the introduction of foreign bricks in the local market and the lack of exportation of our own product to the markets of the world, as in the past, and there must be some cause. It is plain enough that the spirit of centralization of power, having taken control of nearly all the natural gifts of the country, has taken the brick into its grasp, and in spite of the progress of the world has forced the small manipulator to the wall, thus, not only destroying the small brick maker but our once valuable merchant's marine as well. The little two masted schooner craft no longer bears its precious burden of burnt clay from Penobscot river to the wide world, but in their stead great barges of thousands of tons capacity are carrying coal, lumber and other products, while the brick is being shipped from the mouth of clay mines by rail.

We do not have to mine our clay; it is in the hill-tops as well as in the valley. It will respond to the touch readily, and by the aid of the natural law of gravitation will assist in its own creation into the blocks which have made this country.

The great ocean monsters which now carry the coal, railroad iron and other foreign product into our port, are towed out of the river empty. This is an awful spectacle: an awful condition to be permitted in a country and city with such wonderful natural facilities. They should be laden with manufactured clay product which would again give Bangor its proper place among the progressive cities of the world.

How can this be accomplished? Can it be done by men staring at each other, finding fault with what little progress may chance to be made. You have seen the great corporations which have been organized with foreign capital make the Magic city grow in the wilderness of Penobscot and St. Croix rivers. You see around you evidence on every hand of the world's anxiety to assist you in placing the state where she belonged, not only now but half a century ago.

The great dams which are proposed above to hold back the waters in our lakes and streams, the electrical current passing from the great powers up the river through the unity of force applied with it from outside capital, these, all these things for the development of the paper industry. You have seen your local citizens organize for mutual benefits for the purpose of purchasing the homes of the poor to hold and to elevate them against the incomer who is asking for permission to dwell among you. Why not organize to construct, to build, to elevate something that will be of benefit to struggling humanity.

TARIFF COMMISSION'S REPORT ON BRITISH POTTERY INDUSTRY.

Consul-General Robert J. Wynne, of London, has transmitted a printed report issued by the tariff commission as a result of investigation into the present unsatisfactory condition of the British pottery industry, and the measures proposed for its protection from foreign competition, of which the following is an abstract:

The output of British pottery is estimated at \$26,766,000 of which \$10,950,000 worth is exported, and the balance, \$15,816,000, being consumed in the United Kingdom. While the world's use of pottery has undergone great extension in recent years, the British industry has not only failed to expand accordingly, but has failed to keep pace with the home demand. While the industry has undergone no practical change, the exports of British pottery clays have more than quadrupled in thirty years.

While the exports of British pottery have remained practically stationary for the last twenty-five years, the German exports have risen from \$14,595,000 to \$24,333,000 during the last eight years. French and Austrian exports have risen during the last ten years from \$5,000,000 to \$7,500,000 and from \$3,260,000 to \$6,140,000, respectively.

The United States still continues to be the chief market for British pottery, although the decline in the exports thereto since the imposition of the McKinley and Dingley tariffs has amounted to 40 per cent, while German exports to the United States have increased 160 per cent in the last six years and now exceed \$7,300,000, against British exports of about \$2,500,000. The British industry expects that under their tariff protection American manufacturers will soon be able to supply their entire home demand. British colonial markets now rank next in importance to the United States. Canada and South Africa, wherein British goods have preference tariffs, show large increases in the consumption of British pottery, while Australia, wherein there is no preference, shows a heavy decline. British exports to South America show an upward tendency.

The most disturbing influence in the British pottery industry has been the steady increase in the imports of foreign pottery into the United Kingdom in the last twenty-five years. Germany exports to the United Kingdom five times as much imports as it did thirty years ago, while in ten years the imports from Austria have increased twelvefold, and those from France 56 per cent in ten years. The feature of foreign competition of which the greatest complaint is made is the sale of imported pottery regardless of cost price. German manufacturers, having their own market secure, dispose of their pottery in the United Kingdom at less money than the British manufacturer pays for labor alone on similar articles, and this foreign "dumping" is often coupled with the piracy of British designs, the effect on British trade being often disastrous.

The result of all the foregoing is that British potters have suffered to the extent of 25 per cent in their wages for some years past because of short time, and that despite the greatly increased use of pottery ware there are fewer people employed today in some districts than there were twenty-five years ago. It is generally agreed that foreign competi-

tion, especially "dumping," keeps the output of some British factories down to one-half their capacity. Foreign tariffs are indicated as a prime cause of the establishment of British pottery firms in the United States and Germany and the emigration of British skilled labor to those countries.

Great stress is laid in the evidence as to the consequences of increasing Japanese competition, in view of the abnormally low wage basis prevailing in that country. In some classes Japanese potters work for 8 cents a day. Japan now sends half her pottery exports to the United States, and there have been substantial increases in its exports to Canada and Australasia.

Those engaged in the industry advocate the need of change in the British fiscal system. One manufacturer testified as follows: "If I could produce 30 per cent more than now from an average of 51 to 90 ovens, I could sell at 11¼ per cent cheaper than at present and be just as well off." A system of appraisement similar to that in the United States based on the value of the goods as sold in the country of production, is recommended.

BIG POTTERY WAR COMING.

One of the greatest selling price wars ever known to the sanitary pottery trade is anticipated between the eastern and western sanitary pottery manufacturers. It has all come about through the expiration of patents on all high-class syphonic closets controlled by potteries associated under the name of the Potteries Selling Company, Trenton, N. J.

With a desire to compel the manufacturers of sanitary earthenware to agree to maintain a selling list whereby a fair margin of profit some of the eastern manufacturers have gotten together to go over the situation. It is asserted that if the war of prices continues long after the patents expired, which was the middle of April, the manufacturers will be unable to keep in the "running."

The Potteries Selling Co. at their last monthly meeting, and just before the patent expired, announced to the jobbing trade that a reduction of twenty per cent in the selling lists on all syphonic action closets had been ordered. On all other classes of sanitary production a reduction of twelve and one-half per cent. was ordered.

Under these conditions, and with those factories not in the association determined to get business, the reductions in time are expected to become lower than ever before known to the sanitary trade.

Among the potteries not affiliated with the selling company are the following: Camden Pottery Co., Camden, N. J.; Standard Pottery Co., Elizabeth, N. J.; Riverside Pottery Co., controlled by the Wheeling Pottries Co., Wheeling, W. Va.; National Pottery Co., Evansville, Ind.; Columbia Pottery Co., Kokomo, Ind., and the Great Western Potteries Co., Kokomo, Ind., and Tiffin, O.

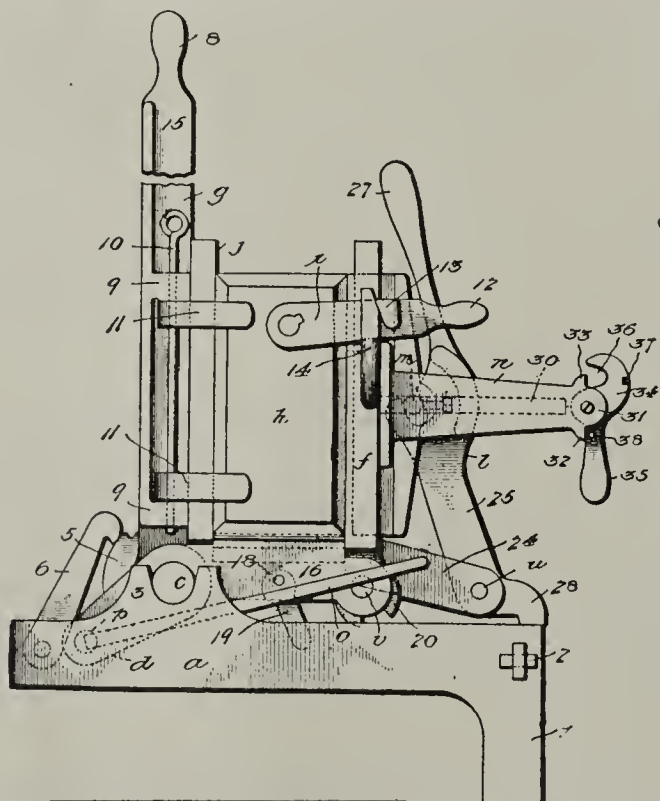
The Potteries Selling Co. is composed of these factories, all of which are located at Trenton: Acme, Bellmark, Brian, Fidelity, Keystone, John Maddock & Sons, Willetts, Sanitary Earthenware Specialty Co., Thomas Maddock Sons, Crescent, Delaware Trenton Potteries Co., Empire and Enterprise.

NEW INVENTIONS THAT ARE OF INTEREST TO THE CLAY MANUFACTURER.

These new inventions are those that are especially of interest to anyone engaged in the line of building materials and their manufacture, or machinery to make them.

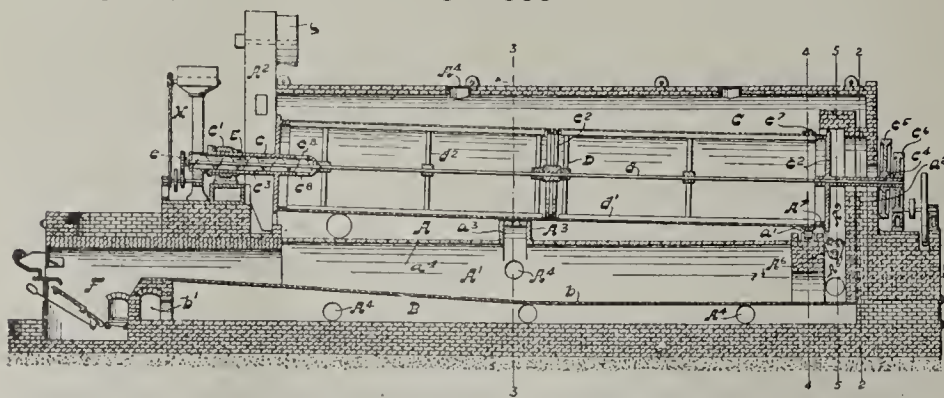
846,277. Brick-Machine. Henry Armstrong, Rochester, N. Y. Filed Dec. 10, 1906. Serial No. 347,117.

Claim—In a brick-machine, the combination of a supporting-frame, a shaft pivotally mounted in said frame, levers carrying a pallet serving as the back of a mold, and plates serving as the bottom of the mold, and also carrying a front door provided with movable division-plates, and end doors hinged to said levers, substantially as described.



In a brick-machine, the combination of a mold comprising a pallet, bottom, end doors, and front door, means for securing said end doors to said front door, pivotal supports for said front door, division-plates adapted to slide in apertures in said front door, a shaft to which all of said division-plates are secured, recessed brackets for guiding said shaft, a pivoted forked lever, the arms of which engage said shaft, said arms being provided with downwardly-extending portions adapted to rest upon the frame of the machine and normally support said front door in a vertical position, substantially as described.

845,833. Drier. Jacob Weintz, Cleveland, Ohio. Filed April 30, 1906. Serial No. 314,333.



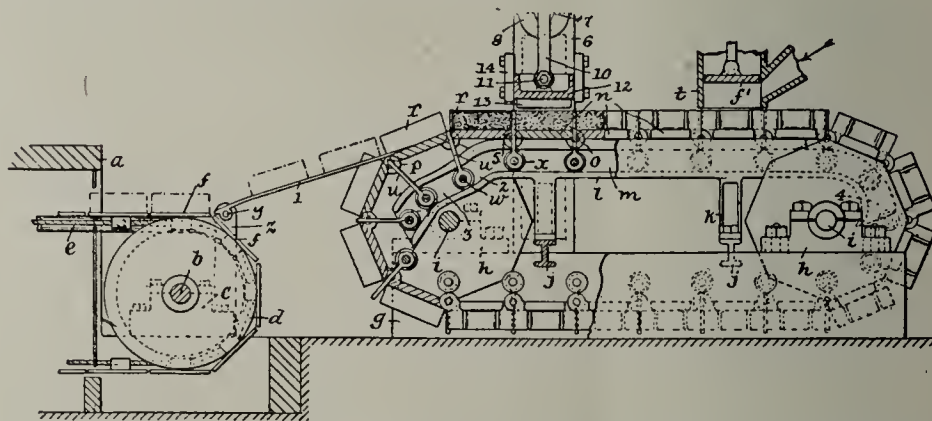
Claim—In a drying apparatus, the combination of a combustion-chamber; a conduit for conducting the gases of combustion formed in two sections one above the other; a drying-chamber associated with one of said sections, but cut off from communication with both of the latter; and an air-conduit associated with the other of said sections and communicating with the interior of said drying-chamber.

In a drying apparatus, the combination of a combustion-chamber; a conduit for conducting the gases of combustion

formed in two sections one above the other; a drying-chamber associated with the upper of said sections, but cut off from communication with both of the latter; and an air-conduit lying below section of said gas-conduit and forming one of the walls of the latter, said air-conduit communicating with the interior of said drying-chamber.

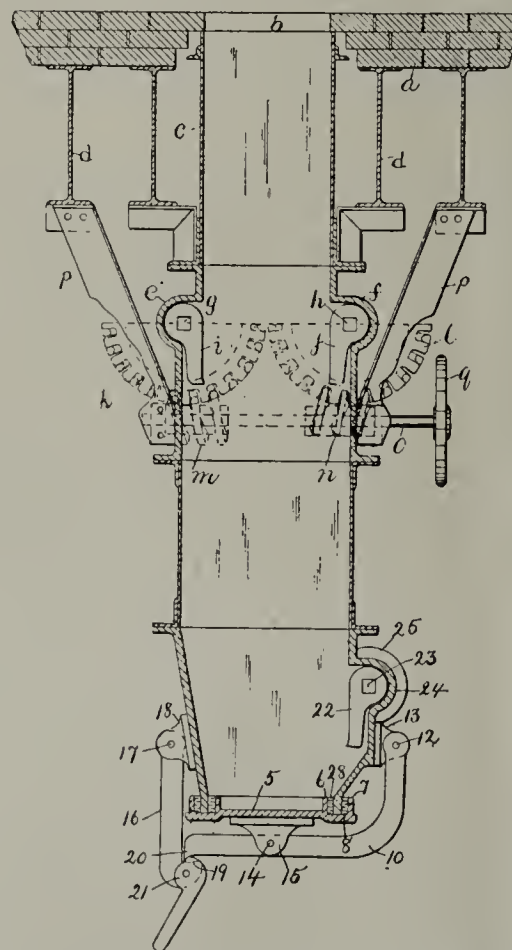
846,536. Brickmaking Plant. Hiram H. Walsh, Little Ferry, N. J. Filed Oct. 8, 1906. Serial No. 337,888.

Claim—A combined endless conveyor and shaping or molding apparatus comprising a series of linked plates forming the bottom wall of the molds, other walls thereon extending longitudinally thereof to form two opposed sides to each mold or compartment, and transversely-extending walls movable in and out of the plane of the longitudinally-extending walls, in planes coincident with where said plates break joints substantially as described.



A combined endless conveyor and shaping or molding apparatus comprising series of linked plates forming the bottom wall of the molds and other walls arranged to form opposed side to each mold or compartment, said other walls being movable in planes coincident with where said plates break joints out of operative juxtaposition to said series of plates to leave the contents of said molds clear of said walls, substantially as described.

847,001. Cooking-Oven. Louis J. Hirt, Brookline, Mass. Filed Jan. 3, 1903. Serial No. 137,630.

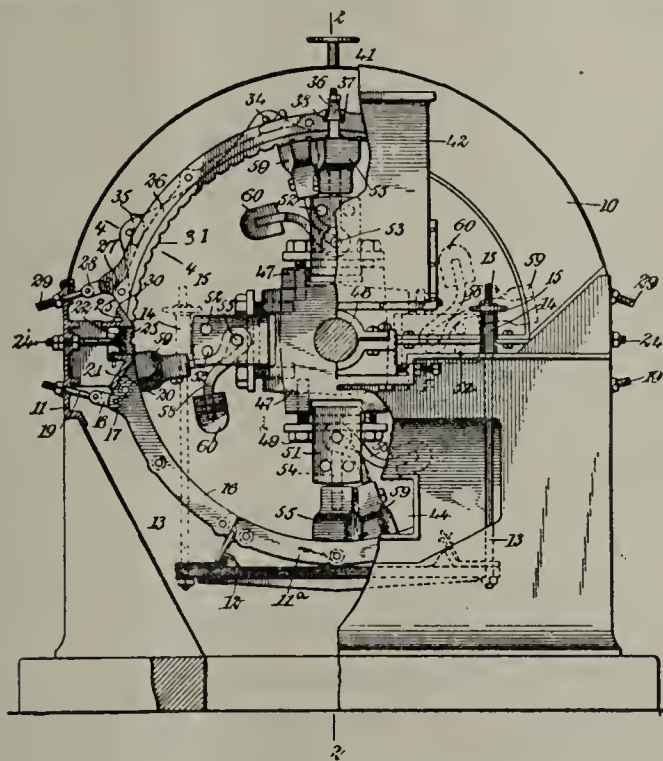


Claim—In a coking-oven, in combination, a coking-chamber provided with an extension having at its lower end a discharge outlet or mouth, a cover to normally close said mouth, supporting cranks or arms located within the exten-

sion above the said mouth, rock-shafts upon which the said cranks or arms are mounted, worm-gears mounted on the said rock-shafts outside of the said extension, and a rotatable shaft provided with worms in mesh with said gears, substantially as described.

848,213. Pulverizer. Nickolas Spurgin, Ottawa, Ill., assignor of one-half to Benjamin B. Holland, Ottawa, Ill. Filed Nov. 24, 1905. Serial No. 288,980.

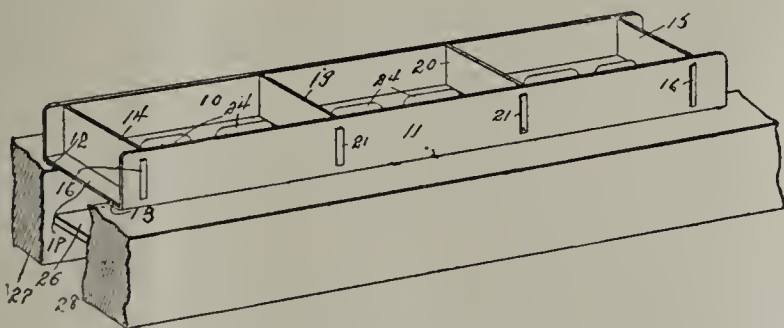
Claim—A pulverizer comprising a sectional casing, composed of a vertically-movable bottom section, two side sections connected therewith, and means for engaging the upper ends of said side sections to move them toward the center of the casing when the bottom section is elevated.



A pulverizer comprising a casing having a movable section, a lining for said section comprising a plurality of sections, each having projections extending through the wall of said movable section, said projections being provided with perforations, rods passing through the perforations of corresponding projections on the sections, and wedges inserted between the rods and the outer wall of the movable section of the casing for securing the lining of said movable section.

847,618. Hand Brick-Machine. Frederick W. Steinhoff, Eddyville, Iowa, assignor to Oscar H. Seifert, Eddyville, Iowa. Filed Nov. 23, 1905. Serial No. 288,729.

Claim—A brick-molding machine comprising inwardly-flanged side walls, outwardly-flanged end walls resting upon the side flanges, partitions having tongues passing through the side walls, cross-rods connecting the side walls above the flanges thereof, movable bottoms between the par-

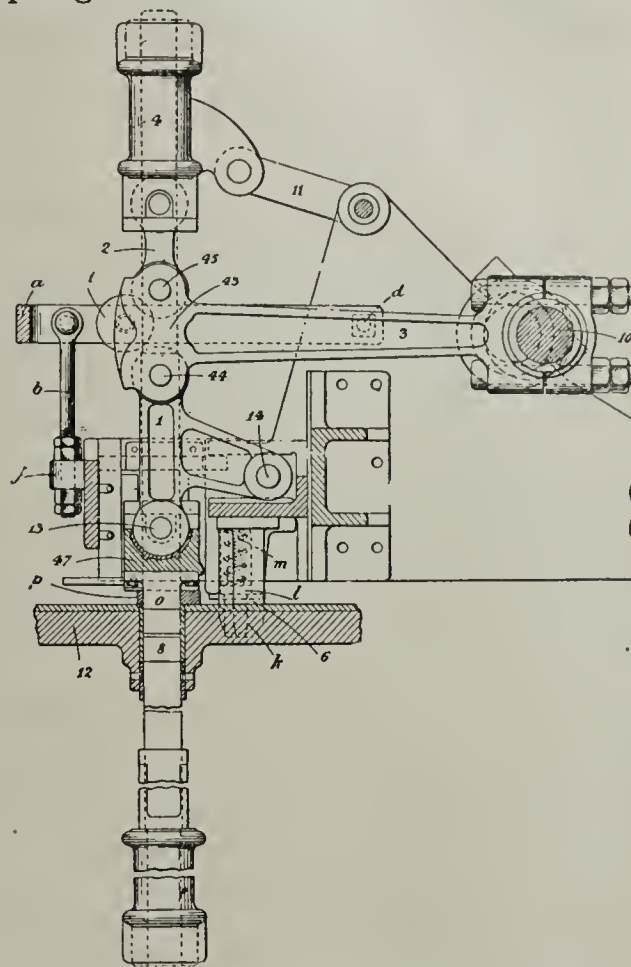


titions and adapted to normally rest on said cross-rods, blocks extending from said bottoms between the cross-rods, and side-wall flanges, and an actuating-plate connecting said blocks.

846,258. Brickmaking-Machine. Edgar R. Sutcliffe, Leigh, England. Filed Oct. 22, 1906. Serial No. 340,063.

Claim—In a brick-press, a revolving mold-table, plungers entering molds therein from the top and also from the bot-

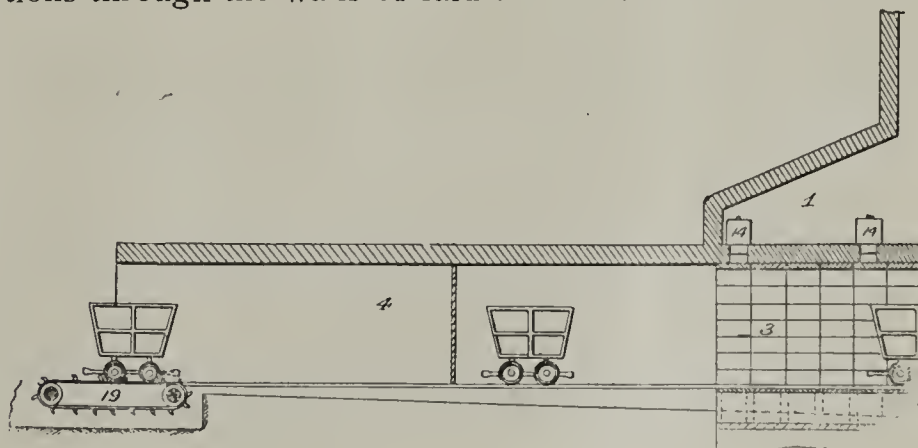
tom, means for causing pressure to be applied to the said plungers, fixed pivots attached to a stationary part of the machine, pins attached to a movable part connected to one of the plungers, so that they come into sliding contact either directly or indirectly, with the fixed pivots and thereby raise the plunger clear of the mold.



In a brick-press, a revolving mold-table, plungers entering molds therein from the top and also from the bottom, means for causing pressure to be applied to the said plungers, a pivoted bracket supported at one end on adjustable eyebolts, fixed pins carried by the bracket with bowls thereon, pins on the pressing mechanism supporting the top plunger adapted to slide over the said bowls, holes in the revolving table, and a spring-operated pin carried by a movable part of the pressing mechanism.

846,559. Continuous Decorating-Kiln. John Gamble, East Liverpool, Ohio. Filed April 16, 1906. Serial No. 311,999.

Claim—A kiln of the character described, provided with a heating or "firing" tunnel-section having two series of heat-conducting flues or passages communicating with a source of heat and extending tortuously in opposite directions through the walls of said tunnel-section.



A kiln of the character described, having a heating or "firing" section and end extension-chambers each having a right-angled end wall opposed to the plane of the entrance to said "firing" section and having an inclined lateral wall forming with said right-angled wall the entrance to said extension-chamber at a point substantially out of alignment with the aforesaid entrance.

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Vol. XXX.

MAY 15, 1907.

No. 9

"I like to read American advertisements. They are in
themselves literature, and I can gauge the prosperity of the
country by their very appearance."—William E. Gladstone.

When times are dull and people are not advertising is the
very time that advertising should be the heaviest. Ninety-nine
out of every hundred merchants advertise most when there is
least need of it, instead of looking upon advertising as the pan-
acea for their business ills.—John Wanamaker.

Yes. Subscribe today.

It doesn't require much effort to grumble.

There is plenty of room at the top—and the rent is al-
ways cheaper.

Don't forget that the Brown stone front usually depends
on a homely brick rear for support.

There is at least one redeeming feature about the air cas-
tles of all of us; we don't have to pay taxes upon them.

Many a man's failure is due to his having wasted his time
in envying the success of his neighbor's strenuous efforts.

One can never estimate a man's salary by the work he
claims to do. It is results that are figured as the basis upon
which to calculate it.

Have you subscribed for the CLAY RECORD this year? If
not you are a little late, better commence with this issue.
Remember the CLAY RECORD is the only Clay Journal pub-
lished in America twice a month and that its cost is only one
dollar for twenty-four numbers.

BUILDING OPERATIONS FOR APRIL.

Building statistics from fifty-four leading cities through-
out the country officially reported and tabulated show a
gradual increase, as the season progresses, over similar
reports for the same month in 1906, showing a widely dis-
tributed building activity for April. In the aggregate the
gain, as compared with April, 1906, is a trifle over 5 per
cent. Twenty-six cities show gains ranging from 6 to 199
per cent, and twenty-eight show a loss varying from 2 to 77
per cent. Greater New York is rapidly recovering her
wonted building activity, while falling behind during the
past few months, the figures for April show a gain of 17
per cent over April of the previous year. The percentage
of gain in other cities is shown by the following figures:
Baltimore, 6; Bridgeport, 99; Denver, 7; Harrisburg, 44;
Louisville, 35; Milwaukee, 46; Minneapolis, 28; Memphis,
6; Mobile, 42; Newark, 63; Philadelphia, 69; Patterson,
74; Portland, 199; San Antonio, 78; Scranton, 28; Spokane,
16; Syracuse, 52; Tacoma, 48; Worcester, 50. The princi-
pal losses fall on the following named cities: Atlanta, 20;
Birmingham, 27; Chicago, 56; Evansville, 35; Fall River,
77; Grand Rapids, 22; Indianapolis, 20; Kansas City, 20;
Los Angeles, 27; Nashville, 28; New Haven, 25; New Or-
leans, 26; Pittsburg, 67; St. Louis, 42; Seattle, 31; Wilkes
Barre, 34; Winnipeg, 45. Many of the latter can afford this
loss and still show a great building activity as compared
with several years ago.

THE ILLINOIS COMPANY SIGNED WITH
BRICKYARD EMPLOYEES FOR THREE YEARS.

President C. D. B. Howell of the Illinois Brick Co. stated
that a contract had been signed granting an all-around in-
crease in the wages of employees. The agreement is made
for three years, and the advances, which vary according
to the different classes of employment, will amount to about
10 per cent in the aggregate of increased expense to the
company will have to bear in payment for labor.

The enlarged expense account naturally reduces the in-
crease in earnings to be derived from the advance in the
price of brick, but the company is selling an immense
amount of its product, and unless something of an unfore-
seen nature occurs to curtail the building industry a great
deal of money will be made.

Mr. Howell expressed himself as being well satisfied
with the terms of the settlement made with the employes,
and laid particular stress on the fact that the company will
be free from labor troubles with its own men for a long
time.

It seems to be the impression among directors of the
company that the present 4 per cent dividends will be main-
tained for some time, and that no attempt will be made to
restore the shares to a higher rate until some of the surplus
lost during the year of trade war demoralization of the
trade generally has been regained. President Howell per-
sonally does not favor paying higher dividends until the
company is well able to do so. He says the company is not
committed to any specific rate of payments, nor is there any
set rule as to the time when disbursements shall be made.

It has been customary to pay dividends quarterly since
the company was reorganized. First, at the rate of 6 per

cent yearly and later at the rate of 4 per cent. He calls attention to the fact that the stock at current market prices yields nearly 8 per cent on the investment, which he believes is satisfactory under the circumstances, when it is at the same time considered that the surplus earnings are being taken care of.

The company has more orders on its books than can be supplied expeditiously. The supply of made brick is extremely small, and great difficulty is being experienced in securing cars from the railroads with which to make prompt deliveries of out-of-town contracts. The bricklayers' strike in Chicago has had no effect outside of the loop district.

MANUFACTURERS ASK UNION FOR MORE APPRENTICES.

EAST LIVERPOOL, O., May 14.—A shortage of workmen, said to be the biggest in the history of American potteries, prevails in the western pottery territory, according to statements made here by pottery manufacturers. Officers of the United States Potters' Association have taken the proposition up with representatives of the National Brotherhood of Operative Potters, the manufacturers seeking a change in some of the rules of the organization which would permit the employment of additional apprentices.

CONTRACTORS IN CRY FOR BRICK AND LIME FOR BUILDING WORK.

So rapidly has the reconstruction of San Francisco progressed during the last few months that the supply of building material has been found entirely inadequate, and contractors at the present time are seriously embarrassed by the scarcity of brick and lime. The situation is acute, and in many places building operations are held up by the lack of material. The price of brick has soared to fifteen dollars a thousand. The burned brick left in the ruins are commanding ten dollars a thousand. Purchasers, moreover, are offering bonuses for the privilege of securing them. The price of lime has gone up to three dollars a barrel and as high as four dollars has been paid on special orders.

The lack of building material threatens to affect other lines. This is already noticeable in the falling off in the demand for horses for teaming purposes. In turn, this has affected the hay market, and prices during the week fell from twenty-five dollars to twenty-two dollars a ton.

Contractors explain that the lime and brick plants which have ordinarily supplied San Francisco are unable to keep pace with the demand. All the plants are working to full capacity. An attempt is to be made at Santa Cruz to increase the output of lime, but no solution of the brick problem is in sight.

After the fire of April, 1906, it was thought that brick would become a drug on the market, but owners of picturesque ruins are able to dispose of the brick that compose them for more than they originally cost. In some instances purchasers of cleaned brick have offered to clear the lots of debris after paying top prices for the brick.

It is stated by building contractors that the demand for lime and brick will increase as the summer advances. They predict that the coming months will witness building operations on a greater scale than has ever been known in an American city.

FIRES, DAMAGES AND LOSSES.

The large brick works owned by R. H. Montgomery one mile west of Lewistown, Pa., was entirely destroyed by fire. The loss is partly covered by insurance.

The issue of April 30th quoted a local paper stating that the Weir Pottery Co. had brought suit against the Western Stoneware Co., of Monmouth, Ills. This was a mis-statement, the suit was against A. D. Philpot and was brought to clear a title.

The case of Harvey Conrad against the Keller Brick Co., Akron, Ohio, was taken from the jury and the jury instructed to return a verdict for the defendant. Conrad was suing for \$10,000 damages for the loss of a leg in a clay crusher and a former trial gave a verdict of \$500 damages which was set aside.

The Atchison, Topeka and Santa Fe Railway Co. must stand trial for giving rebates to the Grand Canyon Lime & Cement Co., Nelson, Arizona, and the latter company must defend itself against receiving rebates from the company. Same to come up in the United States Circuit Court at Los Angeles, Cal., before Judge Willborn.

In the last issue of the CLAY RECORD it was reported that the plant of the Wilson (Ct.) Brick Co., owned by F. H. & F. N. Wilson, was entirely destroyed by fire. Later advice gives the only loss that of the barns of the company, and that the officers and ownership of the company are A. B. Clapp, president, and F. H. Young, treasurer.

DAVIS PLANT PASSES TO METROPOLITAN CO.

The plant of the Cleveland Brick Co., Canton, O., has passed into the hands of the Metropolitan Paving Brick Co.

The deal, which has been pending for several weeks, has been closed, and the new owners took immediate charge of the property. In purchasing the plant, the company paid the trustee in bankruptcy for the Cleveland Brick Co. the sum of \$46,000.

Besides the plant and equipment, the brick manufactured on hand and material were also sold to the Metropolitan Co. for about \$6,000.

In connection with the acquiring of the brick plant the Metropolitan company purchased from J. P. Fawcett, trustee in bankruptcy for W. L. Davis, the Davis farm of ninety-three acres, and another tract adjoining of thirty-three acres, for \$19,000. This makes the total amount paid for the plant and land adjoining, from which clay and shale is secured, over \$71,000.

The Metropolitan Paving Brick Co. has also taken an option on a tract of land of eighteen acres, adjoining the plant and belonging to William Frey. This land, Secretary H. S. Renkert says, will be purchased. The price, however, was not made public.

In speaking of the purchase of the Cleveland Brick Co., Mr. Renkert said: "The plant will be greatly improved and equipped with modern brick-making machinery. We also expect to add new kilns and in time to double the present output. For the present the same force of men will be employed and the plant operated right along."

A ST. LOUIS COMPANY WILL MAKE IMPORTANT IMPROVEMENTS.

Important and extensive improvements to present facilities are contemplated for the coming year by the Ouachita Pottery Co., 606 Century Building, St. Louis, Mo. This company has been operating a test pottery plant at Hot Springs, Ark., and is now installing a permanent plant in which to manufacture high-class art ware, interior decorations and high-class ceramic work generally. It expects later on to install near Hot Springs a plant for manufacturing high-grade and press and glazed brick; roof and ornamental tile and other products for which its Arkansas pottery clay deposits are suitable. In Morgan county, Missouri, six miles northwest of Versailles, the company owns 1,720 acres of clay, shale and coal lands, and at its town of Ouachita expects to install a plant with a daily capacity of 300,000 bricks and general fire-clay products, including fireproof articles. R. E. Bradford of St. Louis, president and general manager of the Ouachita Pottery Co., says: "We have one of the most peculiar deposits that I believe there is in existence. We have a flint fire clay that is equaled only by one other clay, and that deposit is located in Gairnkirk, Scotland. We have drilled over 200 acres, and find that we have a deposit from thirty-five to forty-five feet over this entire acreage, and this does not cover the entire deposit. We have located within 1,000 feet of the flint fire-clay deposits another very peculiar deposit. We have twenty-seven feet of plastic clay, which is covered by three feet of stripping, and immediately below this fire clay we have three feet of plastic shale, and immediately below that we have six feet of bituminous coal, and then immediately below that we are down twenty-seven feet in a cannel coal. This plastic clay and coal and clay is covered over a space of three-fourths of a mile wide by one mile long. It is our intention to erect our plant within 1,000 feet of the two above deposits, which will be in a triangle and immediately beside the Versailles and Sedalia railroad, which was built for the purpose of developing this property. A large stream of water fed by springs assures plenty of water."

THE IDEAL CONCRETE MACHINERY COMPANY'S NEW CATALOGUE.

The above company has its main office at South Bend, Ind., and a works that is as large as any in the United States. They are the originators of the Ideal machine, which makes the blocks face down. They are made strong, beautiful and with economy.

The Ideal catalogue contains sixty-six pages, showing designs of machines and their parts from the smallest sizes to the extremely large ones, and from the making of the ordinary concrete blocks to ornamental blocks, brick, columns, sills, posts, etc.

It shows many tests, gives formulas, the mixture, curing, coloring, etc. The cost, number of blocks required for any building, etc., and a dozen or more views of building which show to what extent cement blocks can be used.

Write to them at South Bend, Ind., if you are interested in concrete blocks.

FRENCH CHINA AGAIN ADMITTED AT OLD VALUATION AND TROUBLE WITH FRANCE IS AVOIDED.

NEW YORK, May 8.—Under a decision by Judge Byron S. Waite of the United States general appraisers \$100,000 worth of Limoges china imported by Haviland & Co. from their factory at Limoges, was admitted at valuation which will sustain the present prices on French china all through this country.

Claims had been made that Limoges was undervalued at the custom house, and for the purpose of making a test the appraisers increased the valuation 720 per cent. The result was that importation ceased, and, as this country was the principal customer for the product, the factories at Limoges had to close. Delegations of workmen appealed to the French government for relief and Ambassador Jusserand took up the question with this government.

The decision puts the valuation virtually on the old basis, so that importations will continue and work at Limoges may be resumed.

LACLEDE AND CHRISTY CORPORATIONS IN REPORTED \$4,000,000 DEAL.

Negotiations are pending for the consolidation of the Laclede Fire Brick Co. and the Christy Fire Clay Co., St. Louis, Mo., two of the oldest and largest concerns of this kind in the United States. The plans of the merger have progressed so far that the promoters expect to close the deal this week and arrange for establishing one corporation.

The transaction involves about \$4,000,000. The Laclede Fire Brick Co. is capitalized at \$500,000, and its properties are valued at \$2,000,000. The plant at Manchester and Sulphur avenues covers about 115 acres. The company employs 600 men.

The Christy Fire Clay Co. is capitalized at \$200,000, and its properties are valued at \$1,000,000. The plant at Morgan Ford road and Gravois avenue covers about 450 acres, and 500 men are employed.

The promoters hope to get several more companies in merger, and it is said have obtained options.

John L. Green, vice-president of the Laclede Fire Brick Co., stated that an agreement had been made to sell the stock of his company. It was learned that several large stockholders in the Christy Fire Clay Co. had given their approbation to the merger, and that proposals had been made to other stockholders.

James Green, president, owned virtually all the stock of the Laclede Fire Brick Co. John L. Green, vice-president, said that this stock had been signed over to the merger plan. Charles Parrott is secretary of this company.

C. M. Christy is president; William C. Morris, vice-president, and R. D. Hatton, secretary of the Christy Fire Clay Co. Some of the stock in this corporation is held in Florida, and, as efforts are being made to acquire it with the other holdings, no statement would be made about the attitude of the Christy Fire Clay Co., but intimations were given that agreements had been made for much of the stock.

Should the negotiations for the merger be realized, as the promoters expect, it is possible that other St. Louis fire brick and fire clay companies will be invited into the new corporation. The Laclede and Christy companies will, it is said, form a strong corporation.

FEDERAL BRICK COMPANY BEGINS ITS OPERATIONS.

The plans of the Federal Brick Company, a New York corporation, formed for the purpose of taking over by purchase the output of twenty or more of the brick manufacturing plants of Southern New England, have been completed, the new concern going into practical operation on May 1. William G. Titcomb of Providence, R. I., is president; William L. Studley, also of Providence, R. I., is treasurer; Virgil M. Palmer of New Britain, Ct., is secretary, and Frank L. Stiles of North Haven, Ct., is general manager. The headquarters of the company will be in Providence, R. I., with branch offices in New Britain and North Haven Ct.

The company is the outcome of negotiations that have been under consideration for the past two years or more. The plan under which the company has been organized provides, according to the promoters of the project, for the purchase by this corporation of the entire product of the common brick manufactured by a score or more yards throughout the southern section of New England that are represented in the concern. These include yards at North Haven, New Britain, Berlin, and several in the valley of the Connecticut river north of Hartford, in Connecticut, Taunton and Bridgewater, in Massachusetts, and Nayatt in Rhode Island.

The approximate output of these yards is estimated at 250,000,000 brick per annum. This entire production is controlled by the new company under contracts that extend over a period of several years. President Titcomb said in explanation of the purpose of the new company that the Federal Brick Co. will act as selling and distributing agent. This, it is believed, will prove beneficial to contractors, manufacturers, employers and consumers as well.

A great saving in transportation charges will also be made, as heretofore it was customary to ship brick from distant point on orders which will, under the new arrangement, be filled from the nearest yards. This can easily be done, as the company can contract with the various yards interested and pay the owners thereof each month for the entire output of their plant. Thus the brick, although at the yards of the several individual concerns, is the property of the Federal Co., and merely remains at these points until ordered to be sent to the destinations from which it is ordered.

The men who are identified as the promoters of the new company have had long, successful and practical experience in the manufacture and handling of brick extending over periods of from fifteen to thirty-five years, and are therefore capable of managing and directing the affairs of such a concern.

The only yard in Rhode Island that is included in the operations of the Federal Brick Co. is the one at Nayatt, that at Barrington not being on the list. President Titcomb, when questioned regarding the Barrington plant, said that the new company would in no manner affect the handling of the output of the yards at Barrington, as the product of that plant, which is of a high-grade finishing brick, will be sold, as heretofore, by the New England Steam Brick Company.

With the single exception of the American Brick Co., all the brick manufacturing establishments that were members of the Central New England Brick Exchange have been taken over by the Federal Co.

The brick that will come under the management of the new company will be entirely what is known as common building brick, and does not include the high-grade, finished sewer or paving brick.

THE THEW AUTOMATIC SHOVEL CATALOGUE.

Catalogue No. 6 of the Thew Automatic Shovel Co., Lorain O., is just off the press. This firm is the manufacturer of high-grade steam shovels, excavators and dredges for mines, smelters, blast furnaces, ore docks, brick yards, cement works, railroads and contractors. They make steam shovels from the No. 0 size, which is a twelve and one-half ton shovel, to the type No. 8, which is a sixty-five ton shovel, and running from a one-half cubic yard dipper to one of three yards.

The Thew shovel is made in such sizes and types as to meet any and every condition encountered in the clay-working industries. For ordinary clays and for outputs up to 60,000 brick the type No. 0 shovel is of ample capacity. For more difficult clays or for larger outputs the type No. 1 is recommended. No. 2 is used for shales or fire clays and is especially designed for such conditions. No. 3 is used where the capacity of the yard is over 150,000 brick daily, while type No. 4 will be found equal to the severest conditions in hard shale.

The shovel is not only a labor-saver and a money-saver, but a time-saver and trouble-saver as well.

RECENT SALES MADE BY THE MARTIN COMPANY.

The Henry Martin Brick Machine Manufacturing Company of Lancaster, Pennsylvania, are forwarding at the present time a carload of Improved Machinery to Winnipeg, Manitoba.

Mr. W. H. Carlon of Manchester, Virginia, is installing a "Martin" Horse Power equipment complete, furnished by The Henry Martin Brick Machine Manufacturing Company of Lancaster, Pennsylvania.

The M. E. Jacobs Brick Company of Berlin, Connecticut, has contracted with the Henry Martin Brick Machine Manufacturing Company of Lancaster, Pennsylvania, to install a 50,000 daily capacity "Martin" Patented Rack Pipe Steam Brick Dryer.

Mr. James E. Romig of Roslyn, Montgomery County, Pennsylvania, has contracted with The Henry Martin Brick Machine Manufacturing Company of Lancaster, Pennsylvania, for a complete Brick Plant of 40,000 daily capacity. This will be a modern equipment including the "Martin" system of manufacturing, handling and drying soft mud brick, automatically working the clay direct from the clay bank to the kilns.

The Henry Martin Brick Machine Manufacturing Company of Lancaster, Pennsylvania, have practically doubled the capacity of their manufacturing plant at Lancaster, Pennsylvania, and whilst they have been handling a larger volume of engineering and constructional work in the equipment of modern Brick Plants than they have ever done heretofore, their facilities have enabled them to keep ahead a very large supply of stock, so as to be prepared to make immediate shipment of Brick Machines, Disintegrators, Conveyors, Granulators, Shafting and Pulleys, with the "Martin" Patent dryer complete, within a few days after receipt of the contracts, carrying as many as five such equipments of 50,000 daily capacity in stock.

SAND OR LIME BRICK OR BLOCK NEWS

Lowellville, O., is to have a cement building brick plant.

Sears & Baker, Modesto, Cal., are promoting a \$20,000 cement brick plant for that city.

G. C. Baldwin of Hoffman, N. C., is in the market for machinery for making sand-lime brick.

The Raber-Wilstrout-Lang Co., Kendallville, Ind., has been organized to manufacture cement tile.

A large concrete block and brick factory will soon be established at Uvalde, Texas, by J. H. Gearhart.

A company has been organized at Bancroft, Ia., with \$50,000 capital stock to make cement drain tile.

A \$100,000 sand-lime brick plant is to be established at San Antonio, Texas, by D. B. Sanders, G. H. Craft and others.

J. C. Mapes of Palacis, Texas, has purchased a site and machinery, and will put up an up-to-date cement brick factory.

The National Glass Brick Co., Pittsburg, Pa., capitalized at \$300,000 will build a glass brick plant at Reynolds-ville, Pa.

The Cheyenne (Wyoming) Cement Block & Brick Co. has just put in a cement brick machine and will turn out 10,000 cement brick daily.

J. L. Scofield of the Miles City (Mont.), Real Estate Exchange, desires to organize a company for the manufacture of sand-lime brick.

The Denbigh (N. Dak.) Brick Co. are about ready to operate their plant. A side track one-half mile long is being put in by the Great Northern Ry.

The Sandstone Brick & Lime Co., Granite Falls, Wash., has secured a location on the Chas. Nobles place and will establish a plant. M. S. Shaw is the manager.

The New Era Brick & Con. Co., Milwaukee, Wis., has been incorporated with \$10,000 capital stock by Jacob Harmes, Robert J. Barth and Michael Rohlinger.

The Xenia (O.) Sand-Lime Brick Co., has been organized with \$30,000 capital stock by A. W. Anderson, Grant Miller, Charles Darlington, J. D. Steele, and H. W. Eaney.

The United States Granite Brick Co., Granger Block, Los Angeles, Cal., are installing the machinery in their plant, 16th and Alameda Sts., and will soon be on the market with sand-lime brick.

The Granite Brick Co., Dublin and Michigan Ave., Columbus, Ohio, is doing a fine business and expects to double the capacity of the plant within the next three months. They have just issued a new catalogue. O. P. Lenox is the president.

The Kansas City Gray Brick Co. have been turning out sand-lime brick at their Bonner Spring, Kansas, plant for a month. The company has \$200,000 capital stock and E. D. Steger of Bonham, Texas, is the president, R. N. Soper, secretary and treasurer.

The Unit Brick & Tile Co., Charlotte, N. C., has been incorporated with \$50,000 capital stock. The company will manufacture concrete brick and roofing tile under the Sawyer patents. Stockholders are Paul Chatham, F. M. Sawyer, J. W. Hass, and L. B. Johnson.

MISCELLANEOUS ITEMS

Briggs Brothers are putting up a brick works at Imbler, Oregon.

The G. T. Harvey Co. have established a plant for the manufacture of drain tile at Harrisburg, Ark.

Several of the business men of Morehead, Kansas, have met for the purpose of locating a brick works in that town.

Belfrey, Mont., is to have a \$25,000 capacity brick works. Parties from out of the city have secured ground on which to put the plant.

Dunkirk, N. Y., is to have a brick-making plant, the old plant of the Dunkirk, Ice & Fuel Co. having been purchased. C. S. Putnam of Cassadaga will be in charge.

C. C. Martin of Watseka, Ills., is considering the starting of a brick and tile works at Shelbyville, Mo. The Commercial Club have a proposition from him before him.

A 60-h.p. electric motor will drive the machinery of the Cresco (Iowa) Brick & Tile Co. this season. New kilns will also be built and the plant operated at its fullest capacity.

A company to manufacture drain tile and brick is being organized at Hanska, Minn. Anton Ouren, Theodore Thormedson, and Editor Eggensperger are the chief promoters.

Three brick works will be operated at De Pere, Wis., this year. They are John Roffers, John Hoekers and A. Van Lanen. Preparations are now being made for starting them up.

The Kingman (Ind.) Tile Works has been sold by J. J. Hobson to Marion Howery and his son, C. E. Howery and will be known as Howery & Son. Mr. Howery comes from Danville, Ills.

William Leach has sold one half of his stock in the Clay Center (Kansas) Brick Co. to George White of Lawrence, who will take charge of the plant. Mr. White is an experienced clay man.

Lincoln Shackleford of the Shackleford Brick Co., Des Moines, Iowa, has purchased the Melbourne (Ia.) Brick & Tile Co. plant and will spend \$5,000 on improvements and increasing its capacity.

The Budwig & Meyers Clay Mfg. Co., Birmingham, Ala., has been incorporated with \$10,000 capital stock. J. E. Budwig is president; Henry E. Meyers, secretary and treasurer and R. H. Kerr, vice-president.

Herman Schroeder of Shakopee, Minn., has bought the Blakeley (Minn.) Brick & Terra Cotta Co. from I. N. Dean and will enlarge and operate same as well as his plant at Shakopee. Adolph Schroeder will manage the Blakeley plant.

The directors of the Forbes Realty Co., in Rensselaer, N. Y., composed mostly of Troy capitalists, and who control the commercial interests on the historic manor grounds, have under consideration the organization of a mammoth brick company.

The town corporation and the business men's association of Bloomingdale, Ind., will give a bonus of \$2,500 to a Brazil company that will build a 8-kiln clay works. A location has been decided upon in Coke Oven Hollow on the C., H. & D. Ry.

The Wadsworth (O.) Brick Co. are now building new kilns at its plant to accommodate the growing business.

The St. Louis & Greenville Pressed Brick Co., East St. Louis, Ills., has changed its name to St. Louis-Collinsville Pressed Brick Co.

The North Branch Plastic Clay Co., of Carter Co., Ky., has been incorporated with \$10,000 capital stock. The incorporators are J. C. and J. M. Hatcher of Kilgore and F. L. Stewart of Louisa.

The Indiana Sewer Pipe Co. is laying the foundations for a new sewer pipe plant at Mecca, Ind., the Marion Brick Co. has also bought 14 acres of clay land and expects to build another large plant there.

Under the name of the National Brick Co., a number of Los Angeles, Cali., men have organized for the manufacture of brick. Their yard is at Newmark on the Salt Lake Ry. They have 35,000 capacity soft mud brick making outfit.

The Oberlin (O.) Brick & Tile Co., has been incorporated with \$12,000 capital stock by D. A. Gager, Allen E. Griffin, Volney McRoberts, Charles I. Vance, and L. E. Burgner. They will operate the Oberlin Brick & Tile Works.

The Peerless Brick Co., Williamson, W. Va., will establish a plant to manufacture building brick. They will make 30,000 brick daily and will want machinery, steam shovel and kilns. E. S. Juhling is its general manager; T. B. Jones, superintendent, and A. C. Pinson, secretary and treasurer.

Brainard, Minn., is to have a brick yard which will be built north of the city on the M. & I. Ry.

Manitowoc, Wis., contractors are paying \$700 per thousand for second-hand brick on account of the scarcity of new brick.

The Springgarden Brick Co., York, Pa., has secured a contract to furnish Baltimore contracting firms with 2,000,000 brick.

The trustee of the B. K. Enamel Brick Co., Leavittsburg, Ohio, has sold the plant to the Leavittsburg Brick Company, for \$14,000.

The brick plant now being built by the Columbus, (O.) and Hocking Coal & Iron Co., near Straitsville is being rushed rapidly to completion.

The Trenton (Mo.) Brick & Tile Co. will equip their plant so as to make paving as well as common brick. G. M. Wolz is the manager of the company.

Mayor Schmidt of Wheeling, W. Va., has a plan to make all inmates of the workhouse engage in the manufacture of brick using the shale deposit near the workhouse.

The Deckman-Duty Brick Co., Cleveland, Ohio, have increased the capital stock of the company from \$35,000 to \$150,000. Charles Deckman is president and Spencer M. Duty, secretary.

A party of surveyors are laying out the ground for a 30,000 brick factory at Grand Junction, Colo., for H. Kern who will start to build soon as survey is complete. The company has been incorporated as the Grand Junction Brick Co.

The New San Francisco Continuous Kiln

is the only CONTINUOUS KILN having regenerative furnaces for burning bricks with CRUDE OIL or POWDERED COAL

This kiln has the greatest thermic efficiency, for the following reasons:

FIRST—A perfect system of regulating the velocity of gases through the kiln.

SECOND—No excess of air, such as is required in UP-DRAFT or DOWN-DRAFT kilns.

THIRD—Perfect air recuperation.

FOURTH—Perfect combustion.

FIFTH—Loss by radiation reduced to a minimum.

SIXTH—No cold air admitted with the fuel in the combustion chambers.

SEVENTH—Heat generated instantaneously.

EIGHTH—No delays, no waiting for the coal or other fuel to ignite, as in the ordinary continuous kiln.

NINTH—The burning bricks receive the full benefit of all the heat produced, as the combustion chambers are contiguous to the kiln.

TENTH—The amount of heat generated is at least 100% greater than that produced by coal screenings dropped between the burning bricks in a given length of time, in the ordinary continuous kiln.

CONSTRUCTION

This kiln can be constructed with 10% less material than the ordinary continuous kiln.

The outside and inside walls, etc., are left down to a point four feet below the coal-floor line of the ordinary continuous kiln, the arch only being built above this line.

There are no BAGS or BAG WALLS to take down and rebuild when the kiln doors are opened and sealed up.

Has no complicated system of flues.

Has no complicated system of GAS PRODUCERS.

Can be arranged for utilizing the surplus heat with a blower, no chimney being required in this case.

This system applied to a HOFFMAN KILN will increase its capacity at least 100 per cent.



WILLIAM A. BUTLER, Patentee, 34 Parkside Ave. San Francisco, Cal.

Union, Mo., now has a brick works in full operation.

The plant of the Federal Clay M'f'g Co., formerly the Smith Brick Works at Newburyport, Mass., has been sold and is to be dismantled and the machinery sold.

The Lebanon (O.) Pressed Brick Co. has been incorporated with \$30,000 capital stock by W. H. Hopping, Geo. Shimp, B. C. Howell, C. W. Ivins and William Evans.

The Gladding, McBean & Co., terra cotta, brick and pottery works at Lincoln, Cal., is to be enlarged again this year, increasing both the brick and terra cotta departments.

The Union Brick Co., Iola, Kansas, are now burning their paving brick with oil instead of gas. This is the first company in Allen county, Kansas, to burn paving brick with oil.

The Zuber Drain Tile Co., Columbia City, Ind., has been incorporated with \$10,000 capital stock. Directors are Philip Zuber, L. C. Eganson, C. J. Eganson and S. T. Eganson.

Joseph Wild of Morton, Minn., is considering the building of a brick plant in St. Louis Co., 35 miles from Duluth, Minn., on the D. M. & N. Ry., where a fine bed of brick clay has been found.

The Francisville (Ind.) Clay Products Co. has been incorporated with \$50,000 capital stock; the officers are O. T. Higgins, president; William Schaleman, vice president; J. L. Beesley, treasurer and secretary.

The Nelson Vitriified Brick Co., Mound Valley, Kansas, has increased its capital stock from \$50,000 to \$100,000 and purchased the Peter Schlomer gas field embracing 17 wells so that they will be well supplied with fuel. They make 100,000 paving brick daily.

M. V. B. Morris has traded the Wayland (Iowa) Brick and Tile Works to William Schultz for a farm.

A. R. Button has located a 40,000 capacity brick works at Big Fork, Minn., near his saw mill, and has secured an expert brick-maker to operate same.

The Birmingham, (Mich.) Brick & Tile Co. are now operating their plant, having put the finishing touches on the buildings the first of the month.

John B. McGorrick of Des Moines, Ia., has taken option on the Merrill Brick Co.'s plant for both rental and to purchase it. The plant has a 30,000 brick daily capacity.

The Haskell (Texas) Brick Co. has been incorporated with \$5,000 capital stock. Incorporators are J. N. McFatter, G. R. Couch, M. A. Clifton, R. E. Sheriff and R. C. Montgomery.

Dr. A. Reichard has purchased the Paola (Kansas) Brick & Tile Works of Albert Merrill, and has started same in operation. Charles Bumgarner, a well-known brick manufacturer, will manage the factory.

O. W. Buck has secured another brick plant for Tyro, Kansas. This one will be located just north of the one just finished and will be called the Tyro Vitriified Brick Co., capital stock, \$60,000. C. H. Pocock will be secretary, and O. W. Buck, manager.

The J. T. Watson Brick Co., Danville, Va., has been incorporated with \$20,000 capital stock. Officers are M. G. Watson, president; John T. Watson, Jr., secretary and treasurer and M. Johnson, vice president. They take over the John T. Watson plant.

To Make The Winning Bid

The Ideal Concrete Machine makes it possible to cut your bid without cutting you profit.



It is impossible to underbid the contractor who manufactures his own Ideal Concrete Building Blocks with an Ideal Concrete Machine.

The marvelous simplicity and rapidity of the Ideal Machine makes it possible to produce Ideal Concrete Blocks at a cost that makes the lowest bid a profitable one. May be successfully operated by any one without previous experience or other assistance.

Ideal Blocks are adapted to any possible architectural design, and excel all other materials in fire and weather-proof qualities.

IDEAL Concrete Machinery

Embodies the only principle (faced down) permitting the use of rich facing material with less expensive material in back of blocks. Adaptable to the manufacture of five different systems of blocks—Hollow, Solid, Veneer, Two-piece, and Continuous, in various shapes and sizes. The same machine makes countless designs of face, and natural stone effect. (See illustration.) Practically everlasting. Not a chain, spring, wheel or cog in its construction. Catalog and valuable facts for builders free on application.

IDEAL CONCRETE MACHINERY CO.
Dept. W South Bend Ind.
W. H. C. MUSEN & Co., Montreal, Canada
Sole Agents for Canada

DIRECT HEAT

DRYERS

FOR

BANK SAND
GLASS SAND
ROCK, CLAY
COAL, ETC.

All Mineral, Animal and Vegetable Matter.

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue W. C.

American Process Co.,
62-64 William St. NEW YORK CITY

The Paul Brick Co., El Paso, Texas, is preparing to double the output of their plant.

The Nevada Brick Co., Reno, Nev., has completed their plant at Fourth and Vine streets, and will soon make 30,000 brick daily.

Welch Bros., managers of the new brick company which is to soon start work in the Nicholl tract, at Richmond, Cal., has contracted for the building of their factory.

The Cleveland Brick Co.'s plant at Canton, O., has been sold to Metropolitan Paving Brick Co. for \$71,000. The sale is one of the results of the Canton State Bank failure.

George N. Dyer, Gardner, Mass., has sold his brick yard property to Cyril Caron of Troy, N. H., who will discontinue making brick and manufacture cement blocks, on account of the clay being exhausted.

The Howkim Brick Co., Guthrie, Okla., has been incorporated with \$25,000 capital stock by Helen Kimber of St. Joseph, Mo., James Howard of Cottonwood Falls, Kan., and L. E. Squire of Guthrie, Okla.

The Electric City Clay Brick Co., Schenectady, N. Y., which has been purchased by F. N. Stevens of Sherman, Can., has been remodeled and new machinery put in, so they can now make 60,000 brick daily.

I. J. Harris & Sons of Burton, O., have optioned the Bunstetter tile plant at Wooster, O., for sixty days, and will incorporate a \$20,000 company to purchase same, after which they will greatly improve the capacity.

A company has been organized and capital subscribed to operate a brick plant at Middlebourne, W. Va.

The Waynesburg (Pa.) Brick and Stone Co. is installing a thirty-horse-power gas engine at its plant on Smith creek.

The Theriault Red Brick Co., Chippewa Falls, Wis., have put in new boilers and the latest-improved machinery in their plant.

The Sutton & Sinsapaugh and the Powell & Minnock brick companies have decided not to operate their yards at Coeymans, N. Y., this season.

The Mohawk (Tenn.) Sewer Pipe Co. has been incorporated with \$12,000 capital stock. C. N. Weaver, S. E. Moore and J. A. D. Haun are the incorporators.

The Davenport (Ia.) Tile Construction Co. has been incorporated with \$20,000 capital stock. The officers are: J. M. Kemp, president; J. T. Kemp, vice-president, and William Krombach, secretary and treasurer.

The Pacific Clay Co., Oakland, Cal., has purchased twenty-five acres of land adjoining the Hyfire Brick Co.'s plant at Vallejo, and will erect at once a plant employing seventy-five hands. This is the fourth company building on Napa creek within one year.

The Latonia (Ky.) Brick Co. has been incorporated with \$20,000 capital stock. Officers are: Julius Herlick of Lexington, president; R. E. Carlton of Latonia, vice-president; Walter Ritter of Latonia, treasurer; B. D. Berry of Lexington, secretary. The plant will make 40,000 brick daily, and be located on the Bowler property.

The Ideal Brick Kiln

SHOULD BE

Cheap and durable and have a big daily capacity.

In order to save fuel it should be of the continuous type.

To produce clean colored bricks without cracks, the preliminary drying should be performed in chambers separated from the burning compartment proper, according to the principle of the common up-draft kiln.

The heat from the already burned cooling bricks should preferably be used to lighten the burning proper.

The different stages of the burning process should always be easily observable. Such one is the

CHMELEWSKI PATENT KILN

Dr. HERMAN RABERGH

Sole Agent in the U. S. A. and Canada

24 Cottage Ave.

Fitchburg, Mass.

CLAY RECORD.

FOR SALE

One 40 h.p. gasoline engine, one semi-automatic side cut brick cutter, Wallace Mfg. Co. make. One disintegrator and dump table made by Horton Mfg. Co.; 75 good brick moulds, also trucks and wheelbarrows. All in good condition. Address
W. H. VANDER HAYDEN,
Ionia, Mich

BRICK AND TILE MACHINERY AT SACRIFICE

Where a country is tiled, factories are offered complete, or in part, Cheap. Have several Brewer Mills for sale, and others.

Engines, Boilers, Crushers, Drying Pipes, etc. If you wish to buy or sell write.

Brick and Tile Machinery
Secor, Ill.

A MANUFACTURING PROPOSITION

We install and equip complete plants for manufacture of Egyptian Plaster Plates, the popular new building material now in great demand. It's inexpensive and modern. Nailed on like boards. Only a small investment, and you have exclusive territory protected by patents.

Egyptian Sheet Plaster Co.
Jackson, Mich.

BRICK PLANT WANTED

Wanted to buy an interest in a pressed or paving brick plant located in Central States and having down draft kilns, or will take a position as manager with privilege to purchase an interest.

Address: "Manager" Care of Clay Record
Chicago, Illinois

BRICK YARD FOR SALE

Good clay, good down draft Kilns; plenty of water; good local demand; good shipping facilities. Address:
STATE BANK OF HAMILTON,
Hamilton, Illinois.

FOR SALE

Modern Soft Mud Plant, city 12,000, good business, good prices, abundance of clay and sand. Address,
WM. M. REED,
Princeton, Ind.

FOR SALE CHEAP

Two American Clay Machinery Company's No. 23 combined brick machines, with repair parts sufficient to make machine first-class. Capacity 7500 to 10000 per hour. Greatest bargain. Write for particulars.
GREAT EASTERN CLAY CO.
39 Cortland St., New York.

FOR SALE

One Chambers pug mill, practically new, sufficiently large for any output. A first class machine in every respect. Address
ALONZO CURTIS BRICK CO.,
Grant Park, Ills.

PRACTICAL MAN WANTED

A large coal mining company having a fine deposit of Sewer-pipe, Terra Cotta, Tile or Brick Clay wishes some practical man to help develop same. An exceptionally good chance for the right party. Address:

"ILLINOIS" Care Clay Record
Chicago, Illinois

PLANT FOR SALE

A first-class tile and brick plant in best part of Iowa. Capacity 15000 brick or tile in proportion. Reason for selling, age. For particulars write to
H. L. SWIFT, Riverside, Iowa

MACHINERY FOR SALE

The following machinery not used by us but all in good condition, will be sold at very reasonable prices.

One Penfield Single Mould Power Re-Press, capacity 10,000 a day.

Two Fate Company Bensing Automatic Side cutting tables. American Enamelled Brick & Tile Co.
1 Madison Ave., New York.

FOR SALE

For Sale—75 Acres; 60 feet of shale, 10 feet of Fire Clay, 3 feet of Coal developed. Excellent conditions. Railroad track. Price, \$15,000. Address.

NEW CENTRAL COAL CO
Terre Haute, Ind.

POSITION WANTED

Young man with experience wants position as manager or superintendent, stiff mud brick yard. Can bring men to fill all the important positions from foreman, burners and setters down.

Willing to go anywhere. Best references.

Address R, Care CLAY RECORD,
Chicago, Illinois.

ENGINES AND BOILERS

Corlis engines, 20x48, 18x36, 16x42, 12x36. Also 40 other sizes and styles in stock.

Boilers, Tubular, 84x18, 78x16, 72x18. Also 60 other styles and sizes in stock.

Send specifications of your requirements and we will make you a proposition that will interest you.

THE RANDLE MACHINERY CO.
1732 Powers St., Cincinnati, Ohio.

A COMPLETE BRICK-MAKING OUTFIT FOR SALE CHEAP

We are consolidating our paving brick plants. This throws out of use.

One Center Crank, 100 horse power Engine.

Two Boilers, 50 horse power each.

One Feed Pump.

One eight foot Frost Dry Pan, wood frame,

One Elevator. One Pug Mill.

One Augur Machine, 50,000 capacity.

One Freese Automatic Cutter.

Shafting, Pulleys and Belting. All in good working order and valued at over \$5000. Will sell same cheap. Immediately delivery

STREATOR PAVING BRICK CO.
Streator, Illinois

FOR SALE.



Right and left-hand One, Two and Three Way Switches, of various gauges, radius and weight rail, at special prices.

THE ATLAS CAR & MFG. CO.,
Cleveland, Ohio.

FOR SALE—CHEAP—New and re-laying rails, 12, 16, 20 and 25 pound. For prices, address

ATLAS CAR & MFG. CO.,
Cleveland, Ohio.

KAOLIN FOR SALE

Have just discovered and offer for sale the finest quality of Kaolin ever mined in Georgia, or the south.
L. T. LEE, Zenith, Ga.

FOR SALE

Clay Disintegrator, new \$50.00; Tempering Wheel used only two seasons \$35.00.

C. EUGENE KEMP
306 Locust St., Williamsport, Pa.

PLANT FOR SALE

On account of too much other business to look after I will give you a bargain on a first-class brick and tile plant located at Edgewood, Clayton County, Iowa. For particulars write.

S. L. CLARK, Redfield, So. Dak

MACHINERY FOR SALE

Soft mud outfit, manufactured by the American Clay Working Machinery Co., consisting of Upright Stock Brick Machines direct attached Pug Mill, Mold Sander, Brick Molds, 5 Leaf Dump Table, 10,000 Wooden Pallets. All in fine condition; very reasonable price. Apply to

BALTIMORE VITRIFIED BRICK CO.
Baltimore, Md.

PARTNER WANTED

A good, reliable man of experience, with some capital to invest in and take charge of a new Dry Press Brick Plant. Plenty of shale, and good market for all the brick. Address

DENIS, care Clay Record,
Chicago, Ill.

FOR SALE

We offer for sale at a sacrifice the following BOYD Presses:

One 3 Mold Standard 1891 Pattern
Two 4 Mold Standard 1897 Pattern

All in good condition. Inspection invited. Immediate shipment.

Harrison-Walker Refractories Co.,
Farmers Bank Building,
Pittsburgh, Pa.



Paper Joggers quoted.

R. A. HART, 41 White St., BATTLE CREEK, MICH

No boiler made, cut from \$8 and \$10, to

4 Wheel, \$3.00

5 Wheel, \$3.25

Guaranteed.

Sold by all dealers

MEN WANTED

Six men experienced in Hollow block manufacturing, highest wages; no labor trouble. Apply to 605 Diamond Bank Building | Ohio Clay Products Co. Pittsburgh, Pa. Salineville, Ohio.

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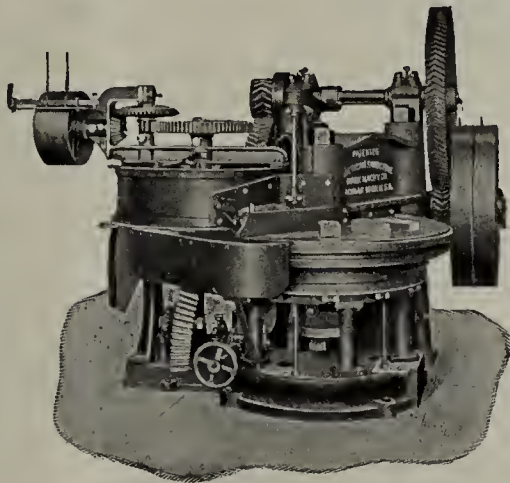
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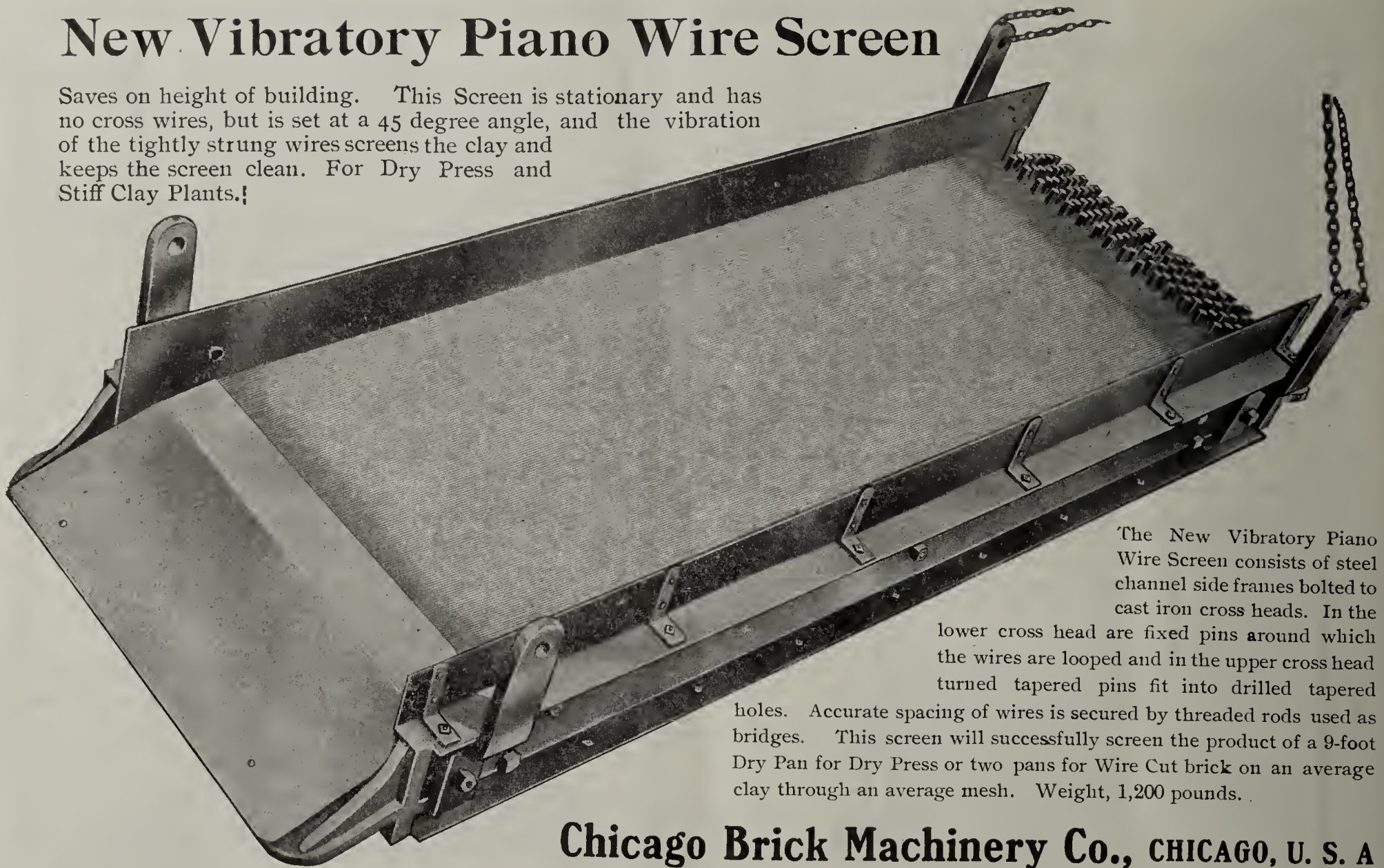
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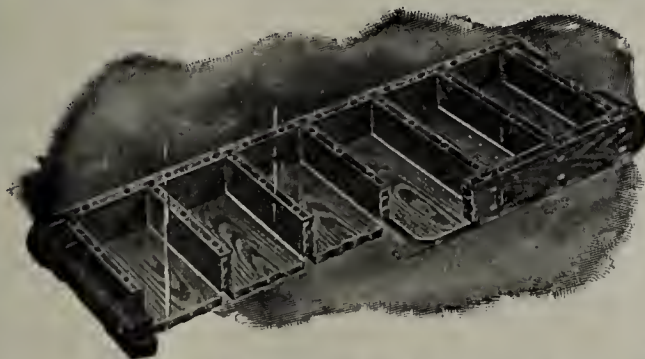
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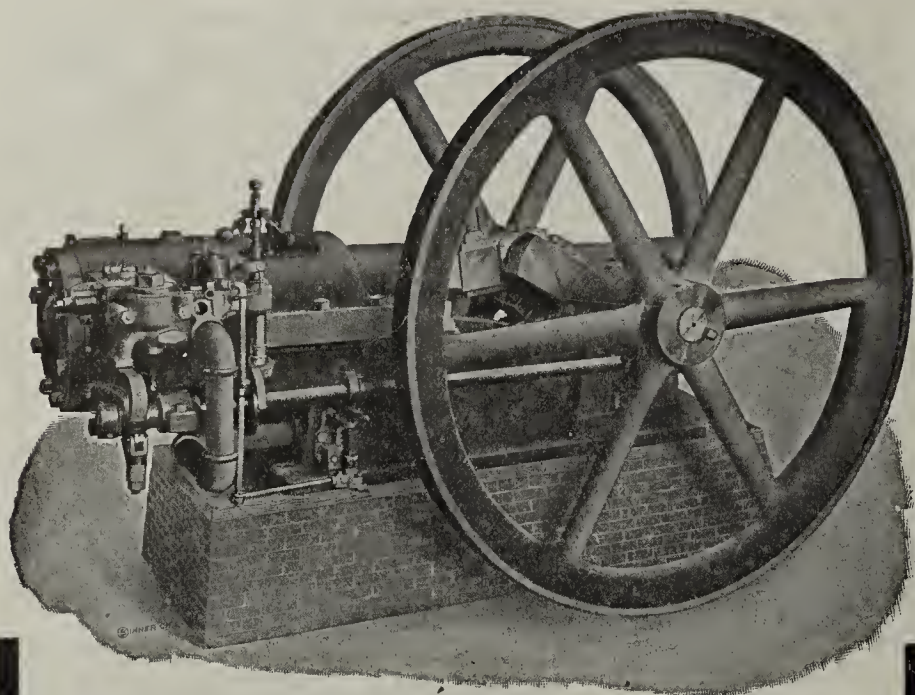
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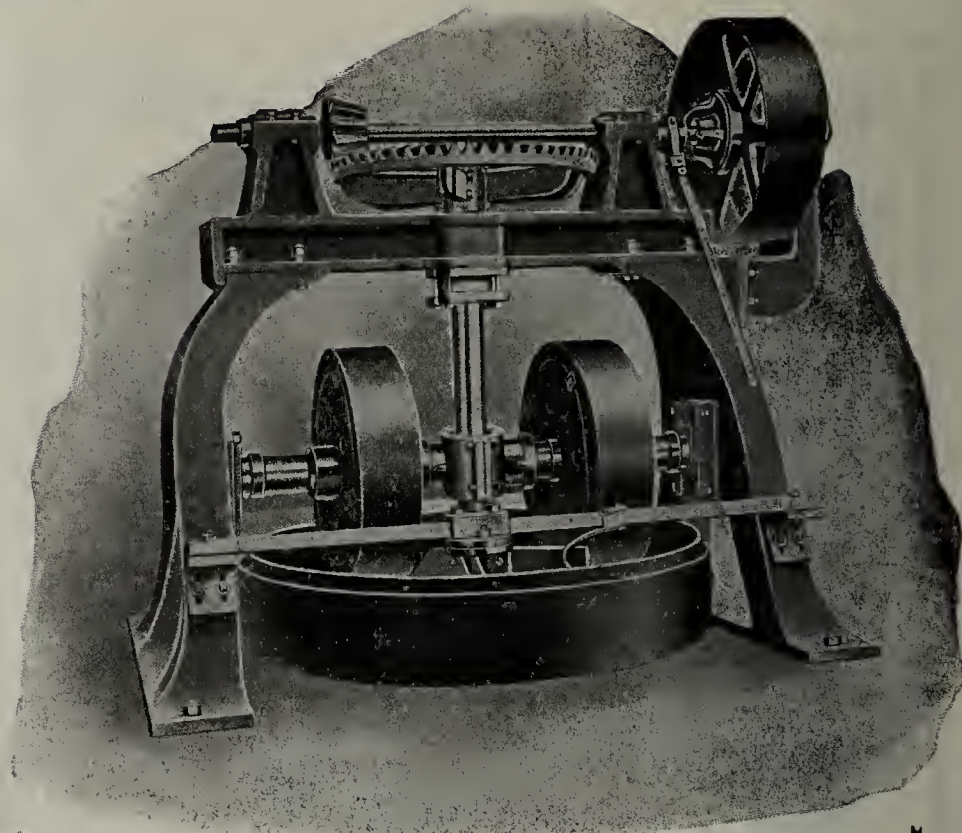


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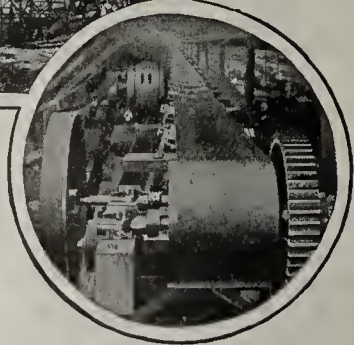
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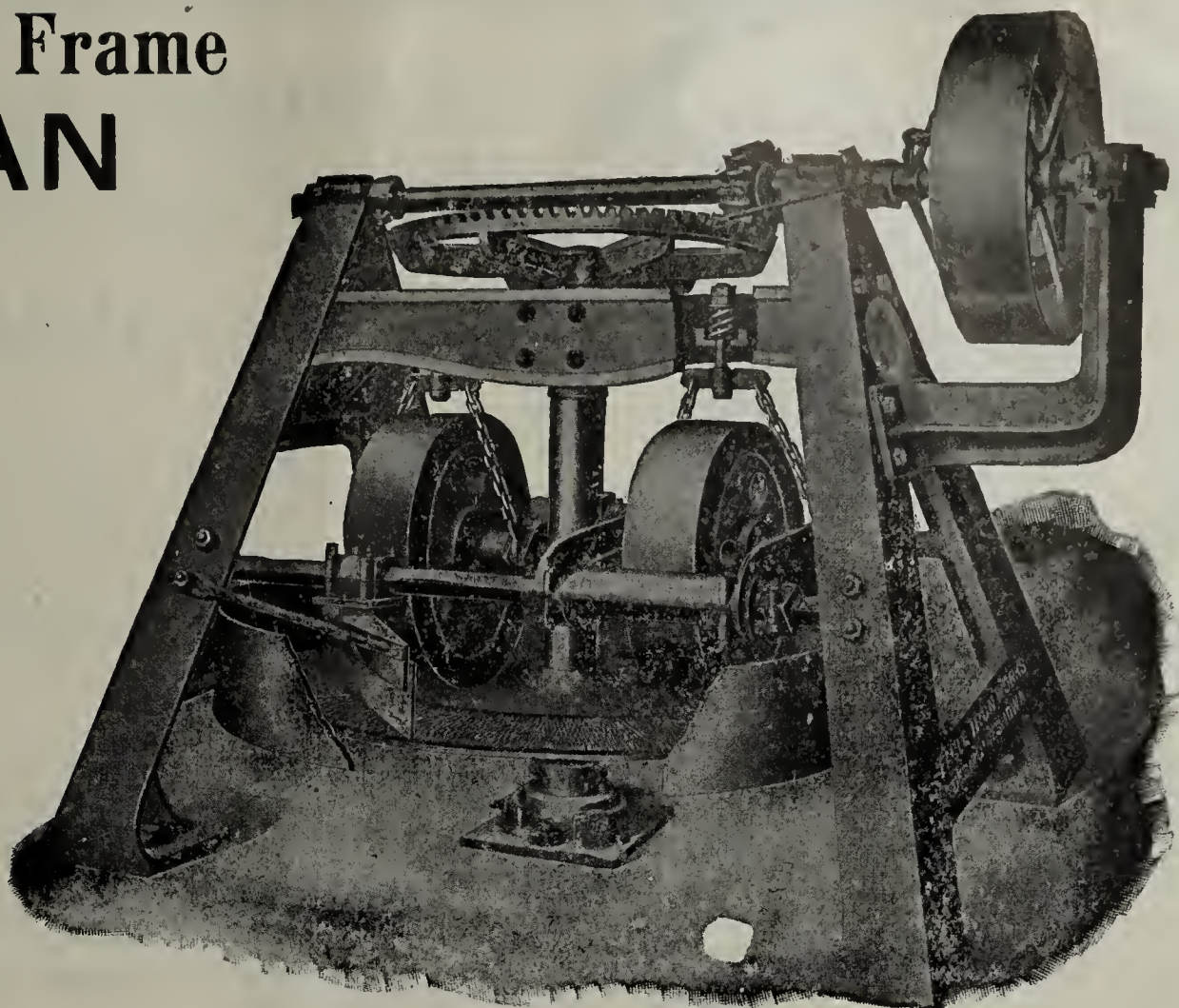
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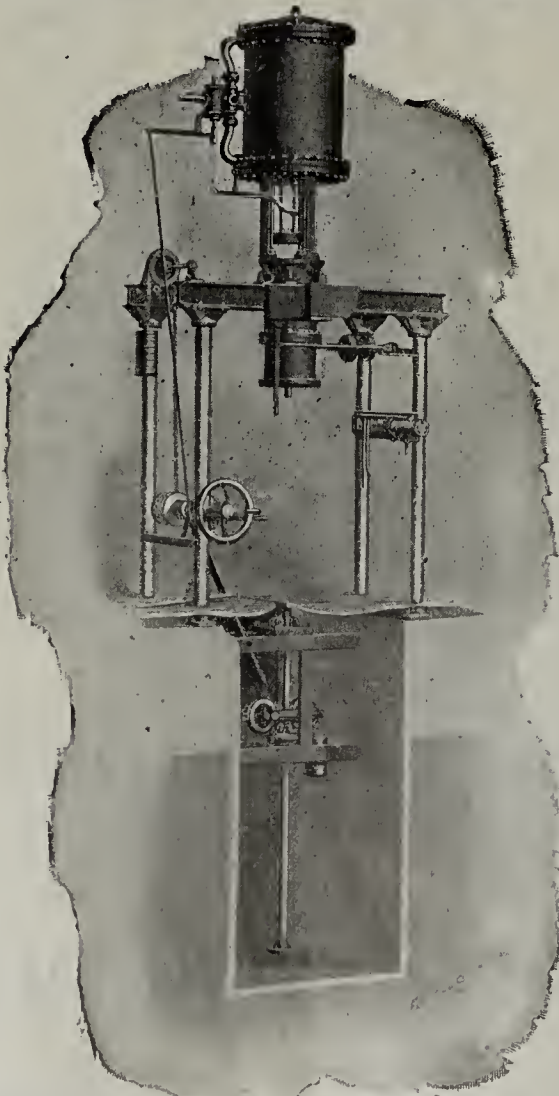
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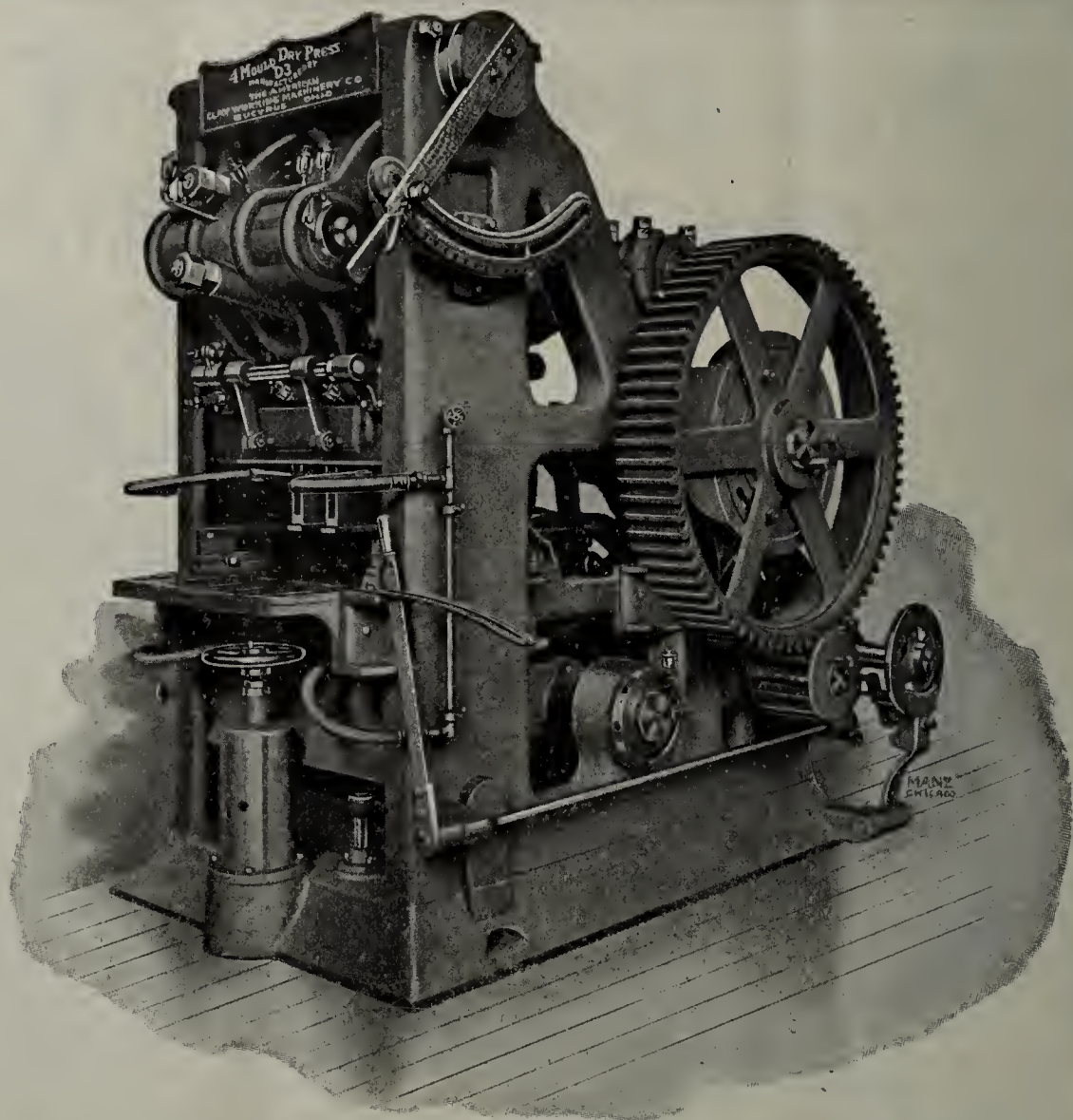
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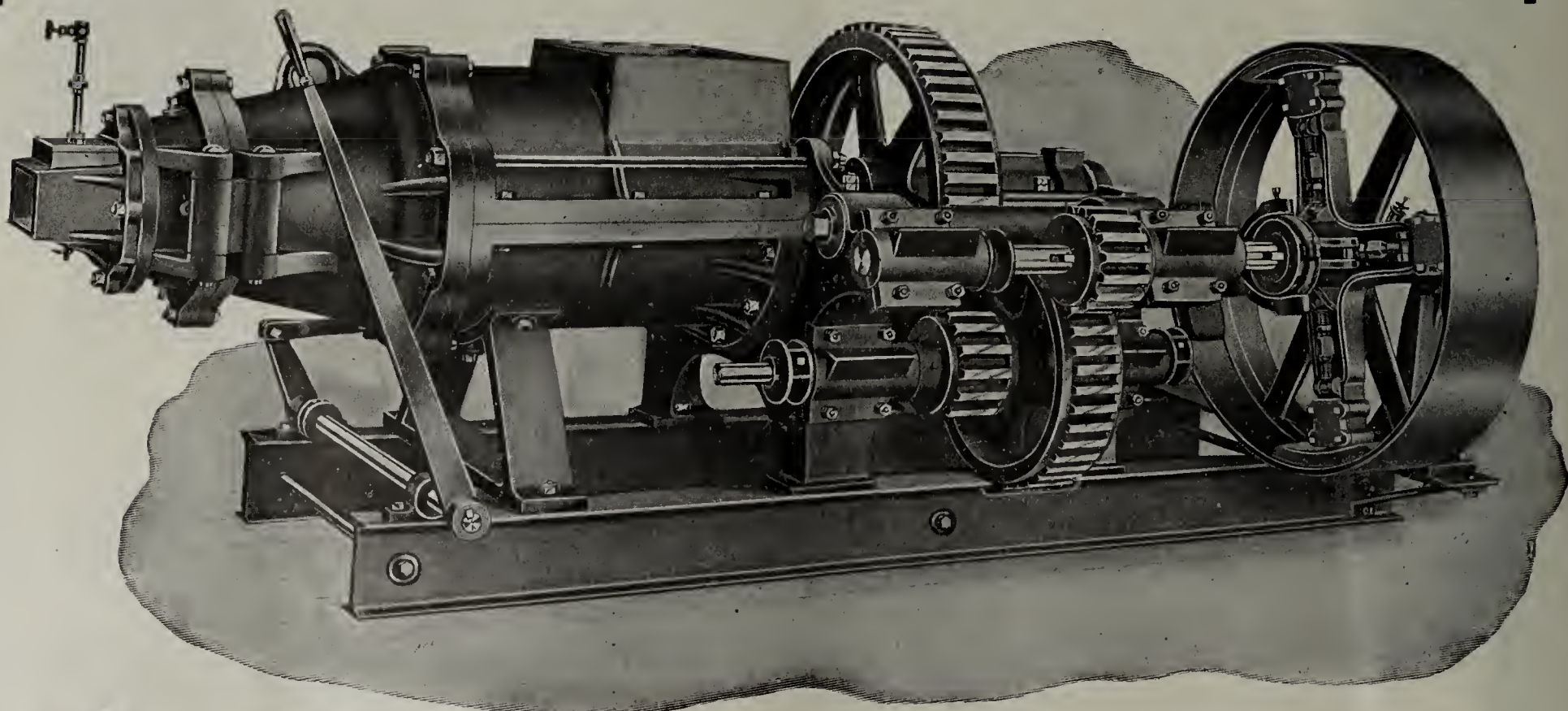


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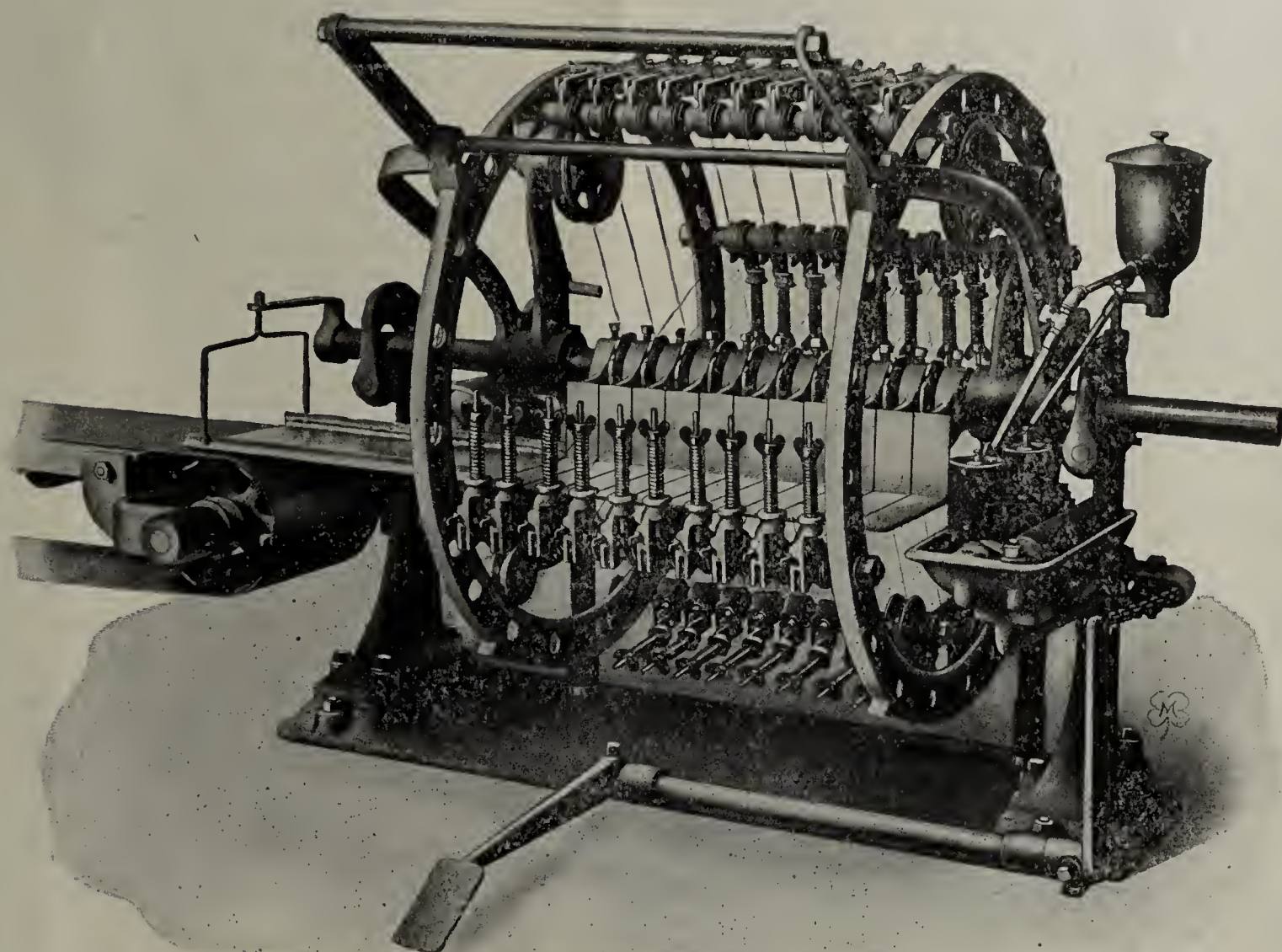


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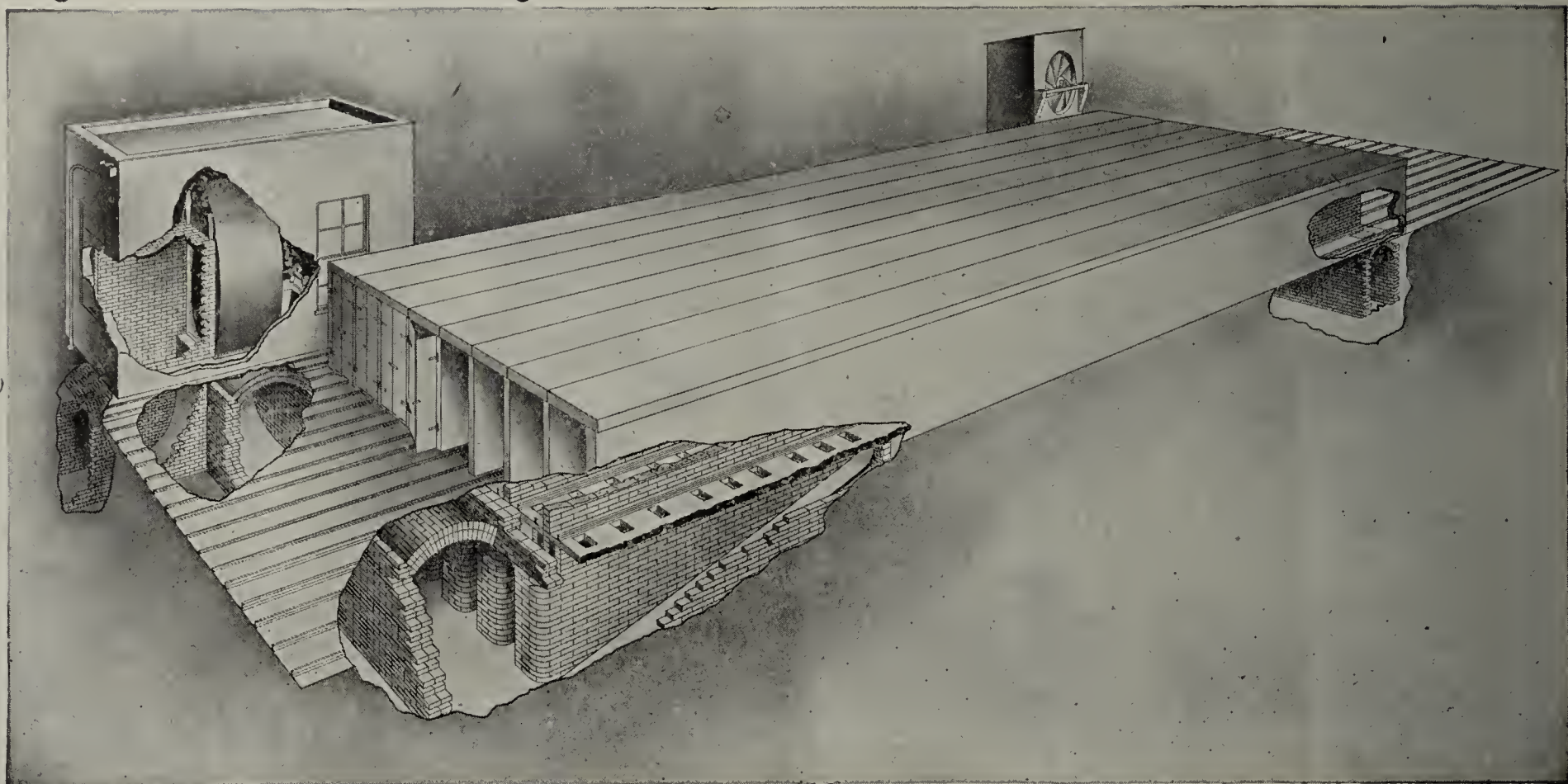
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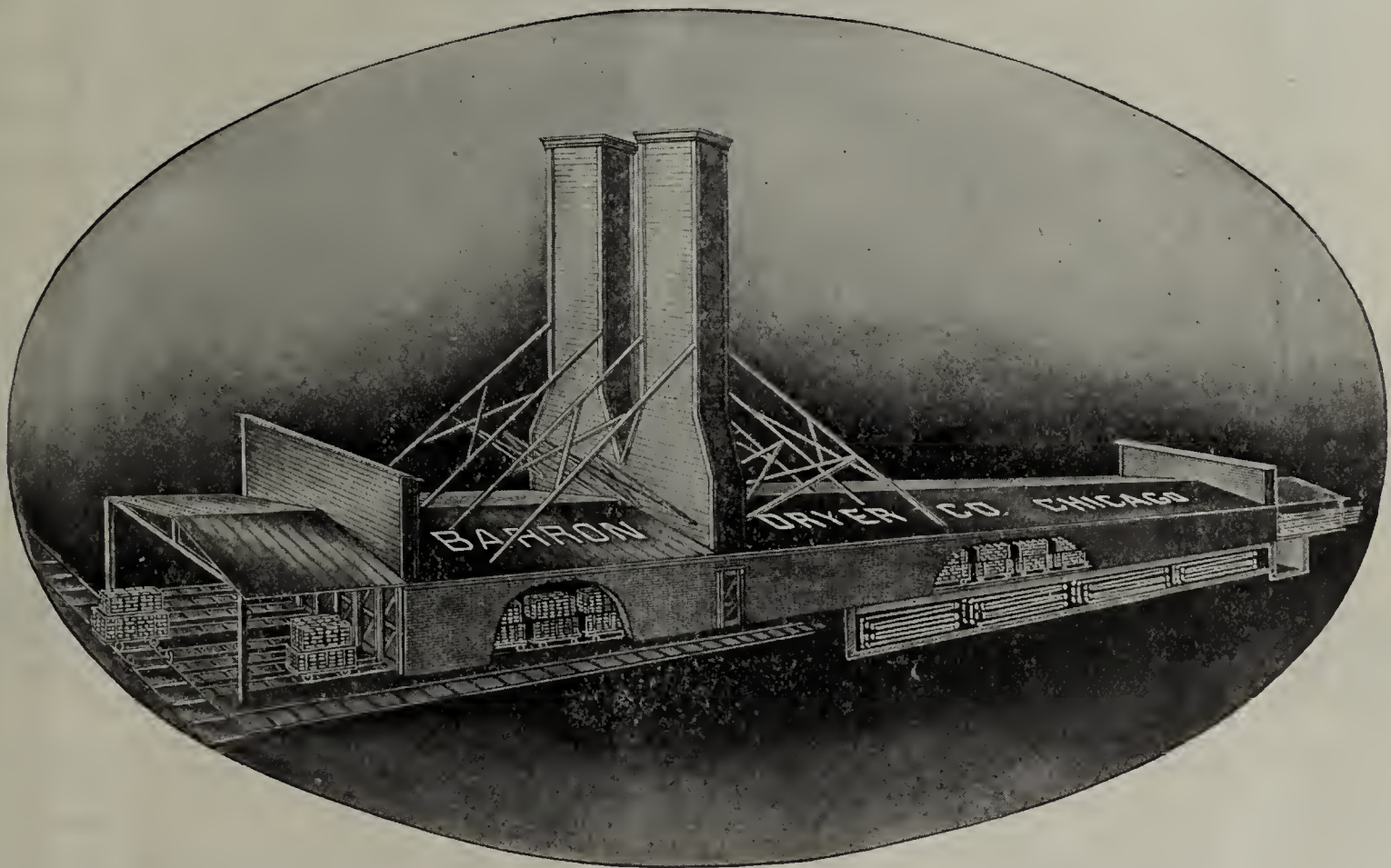
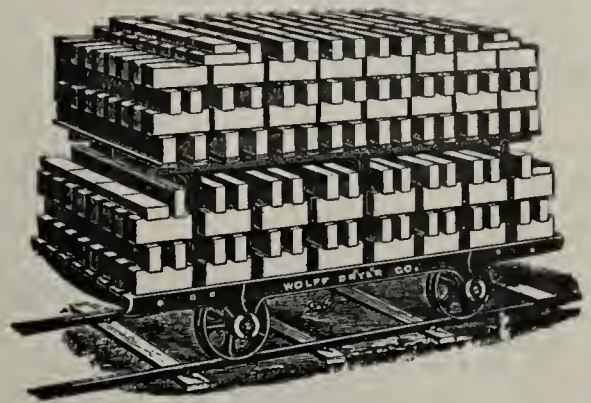
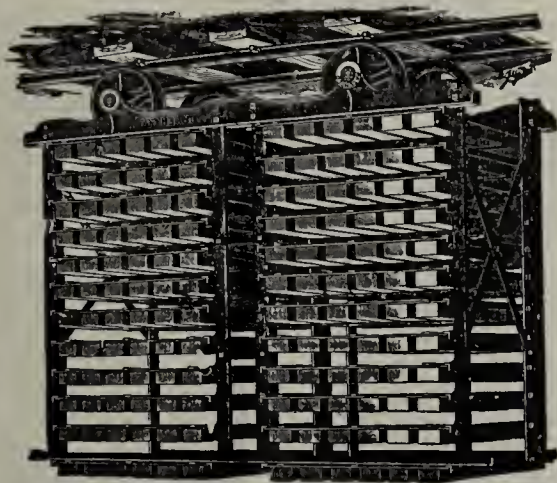
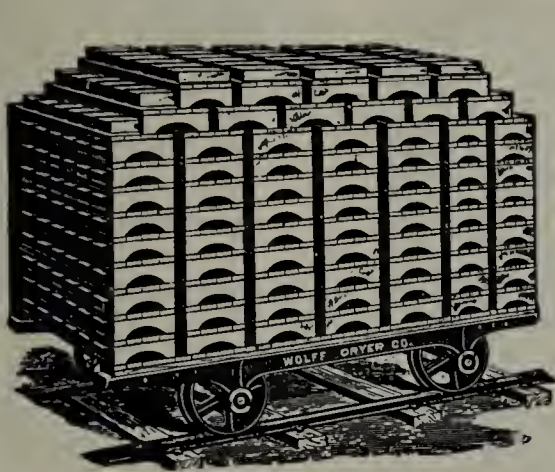
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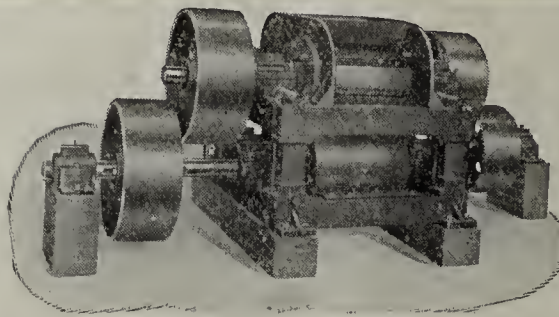
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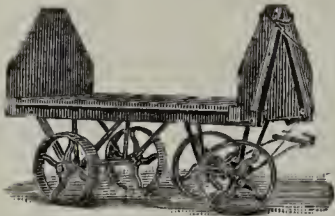


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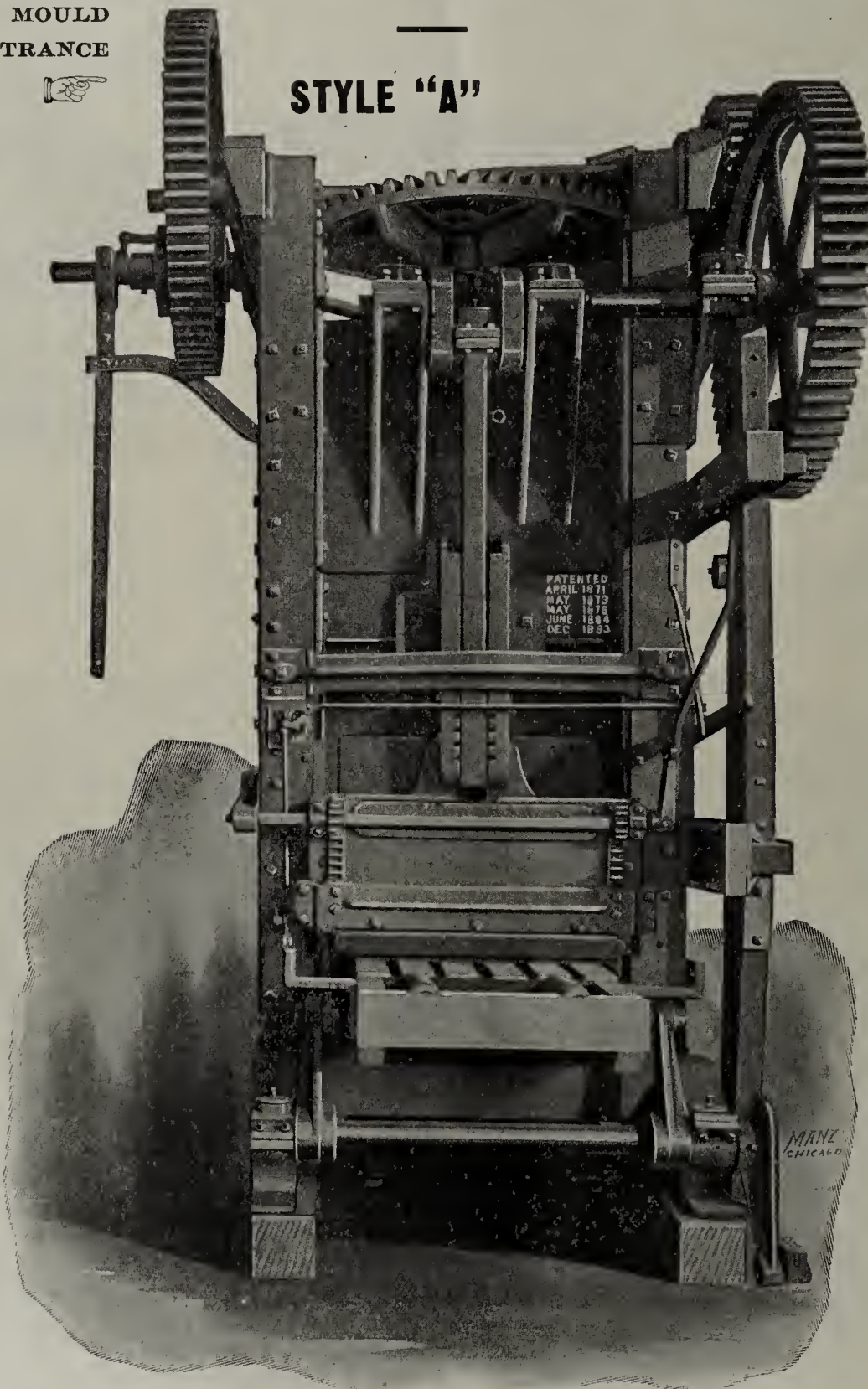
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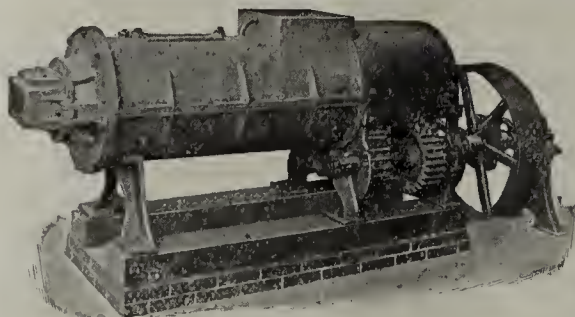
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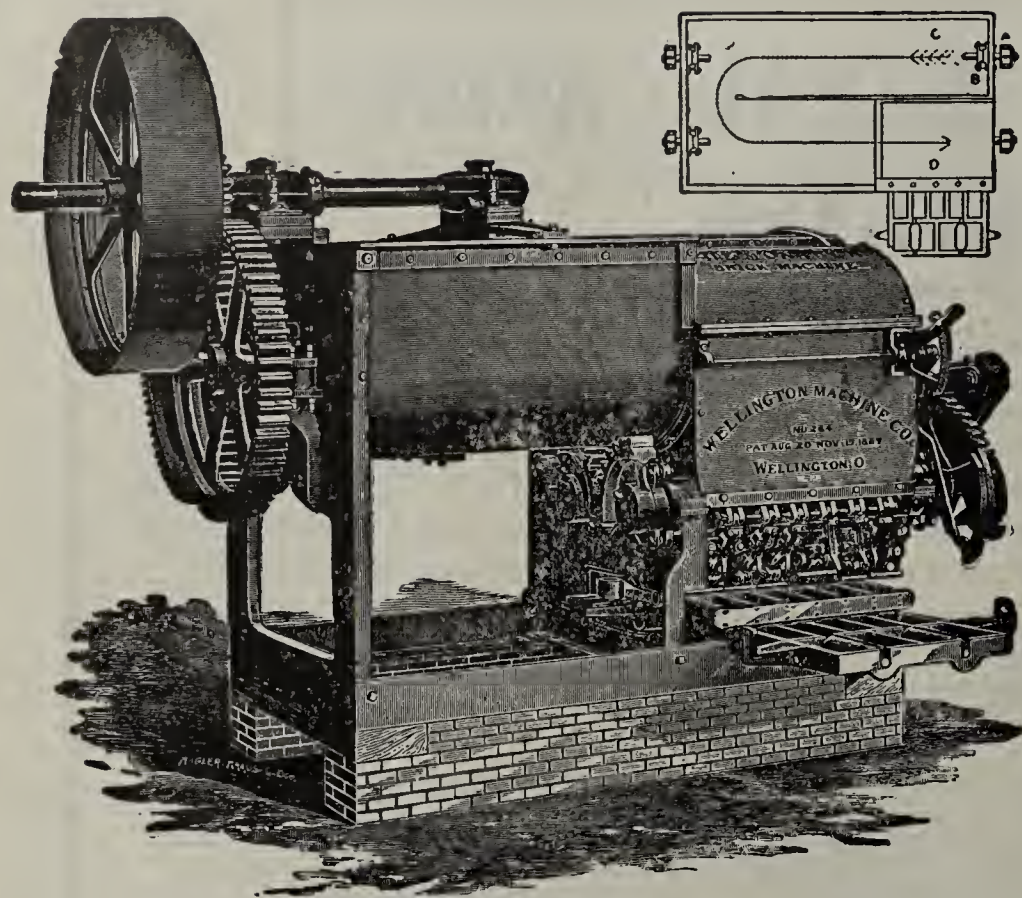
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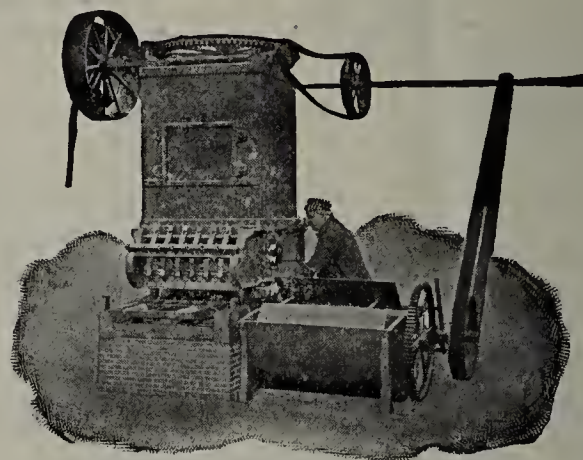
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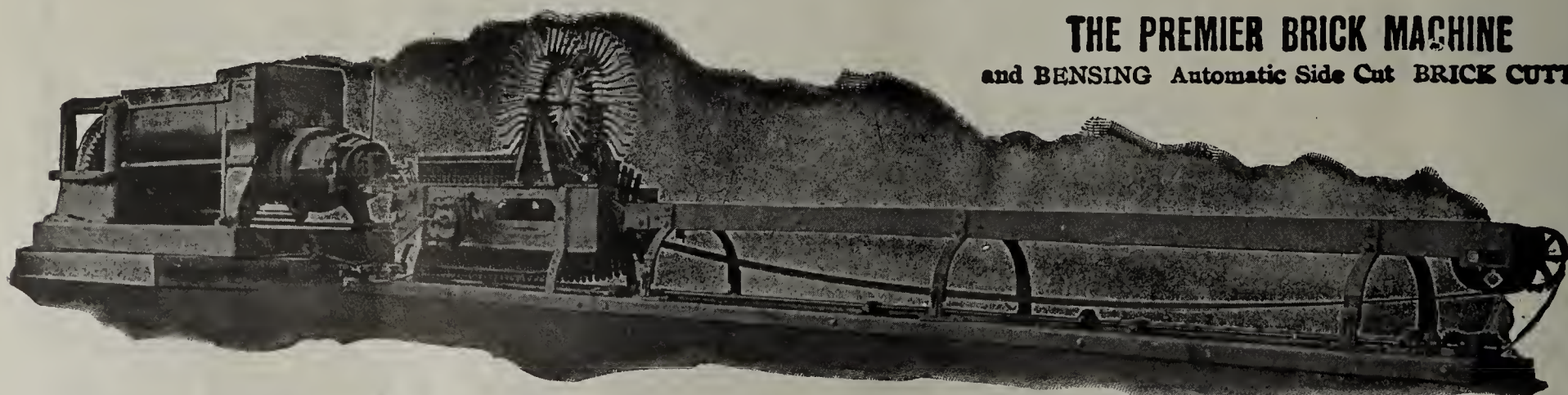


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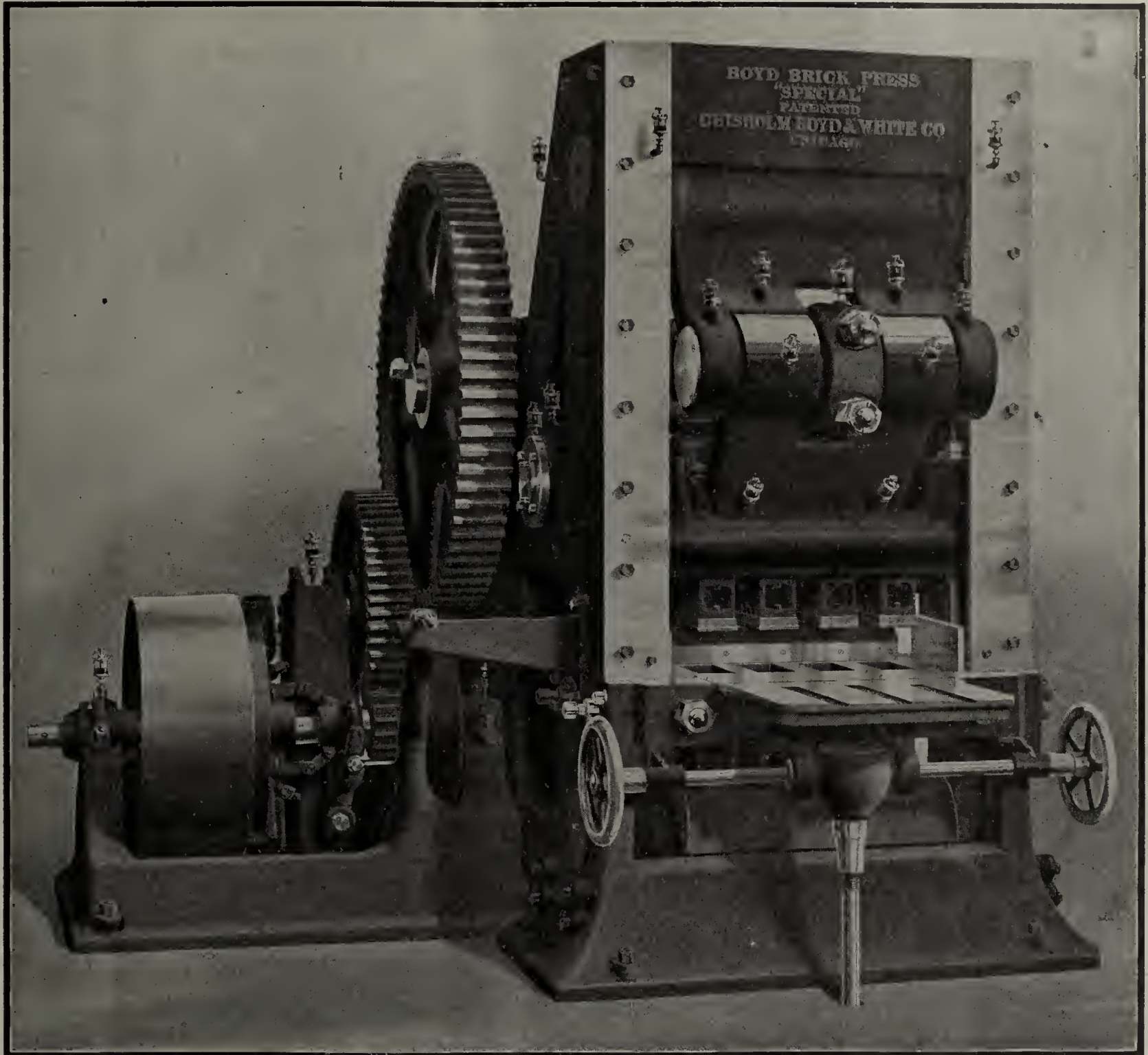
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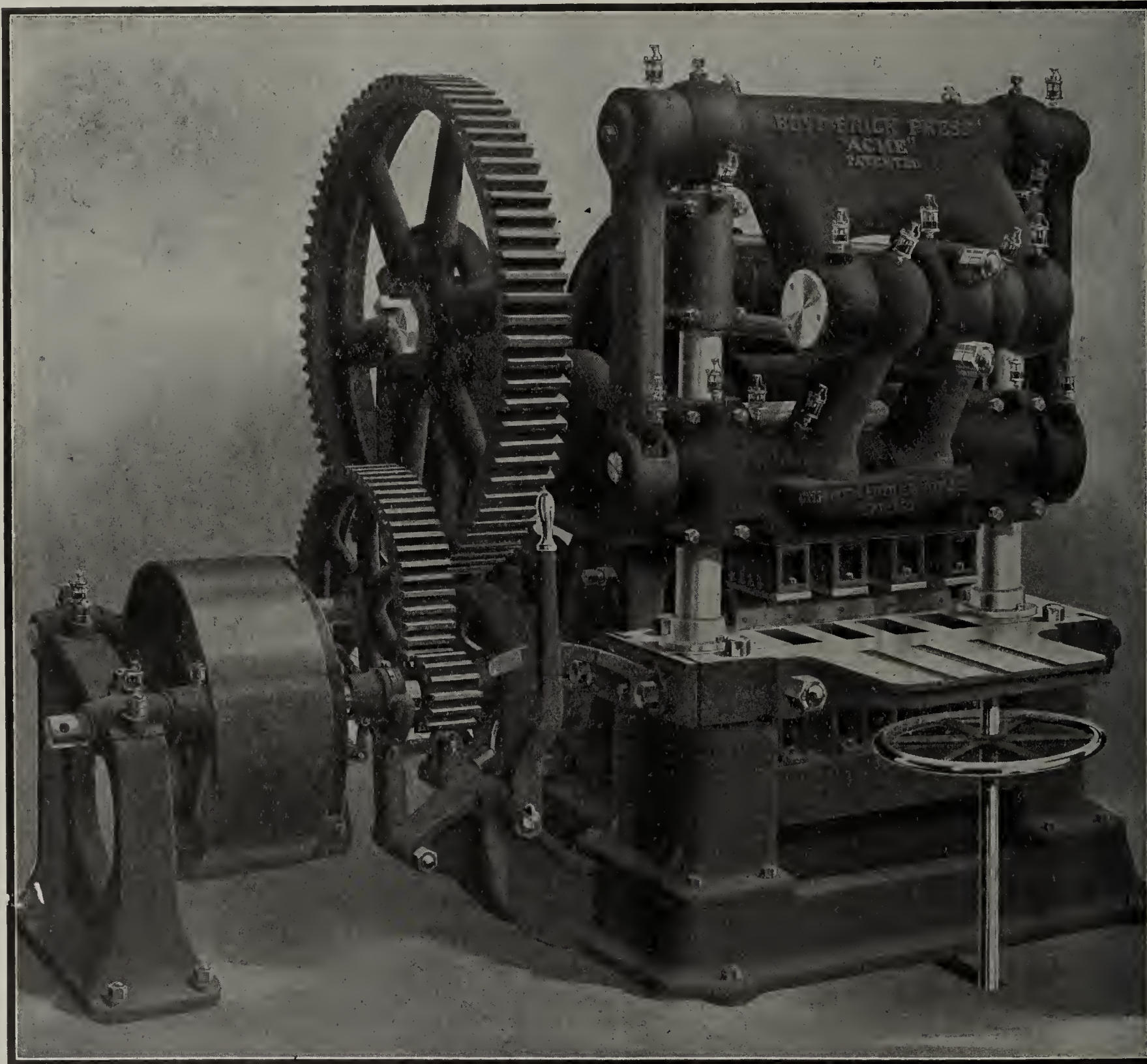
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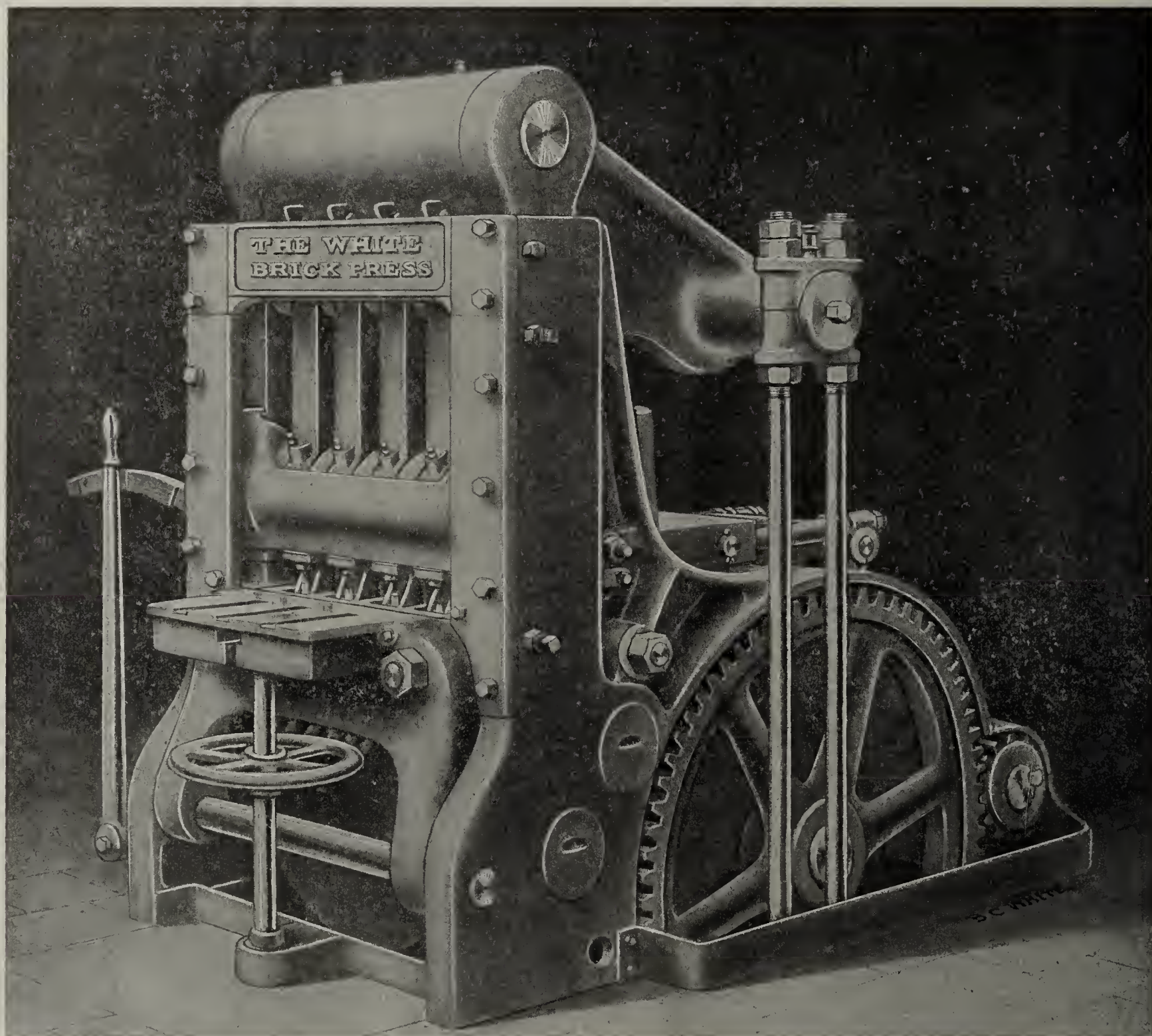
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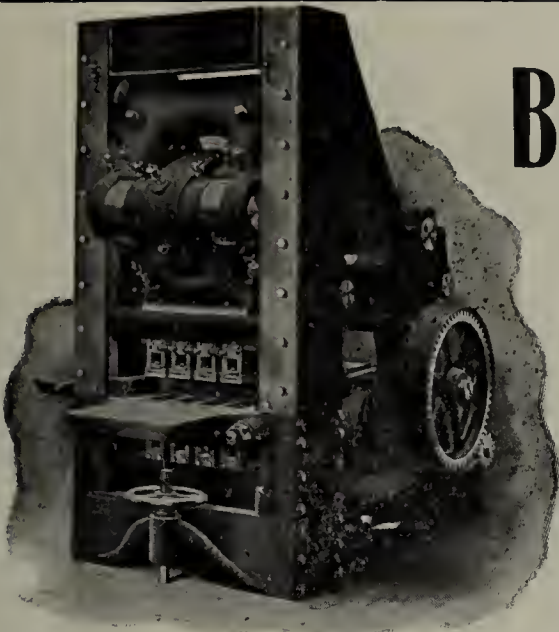
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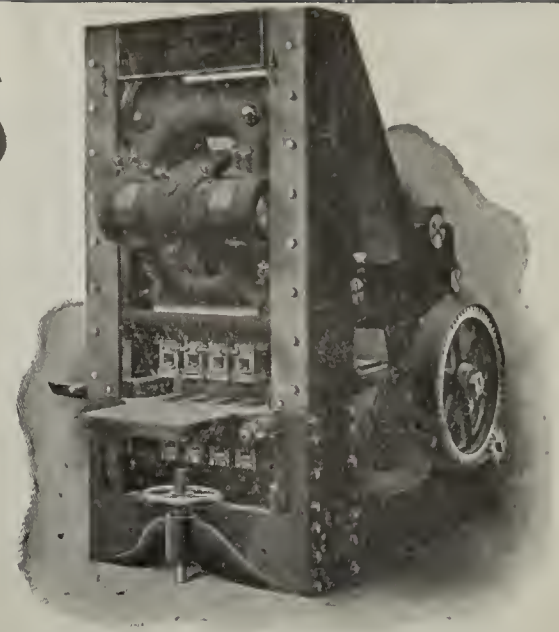
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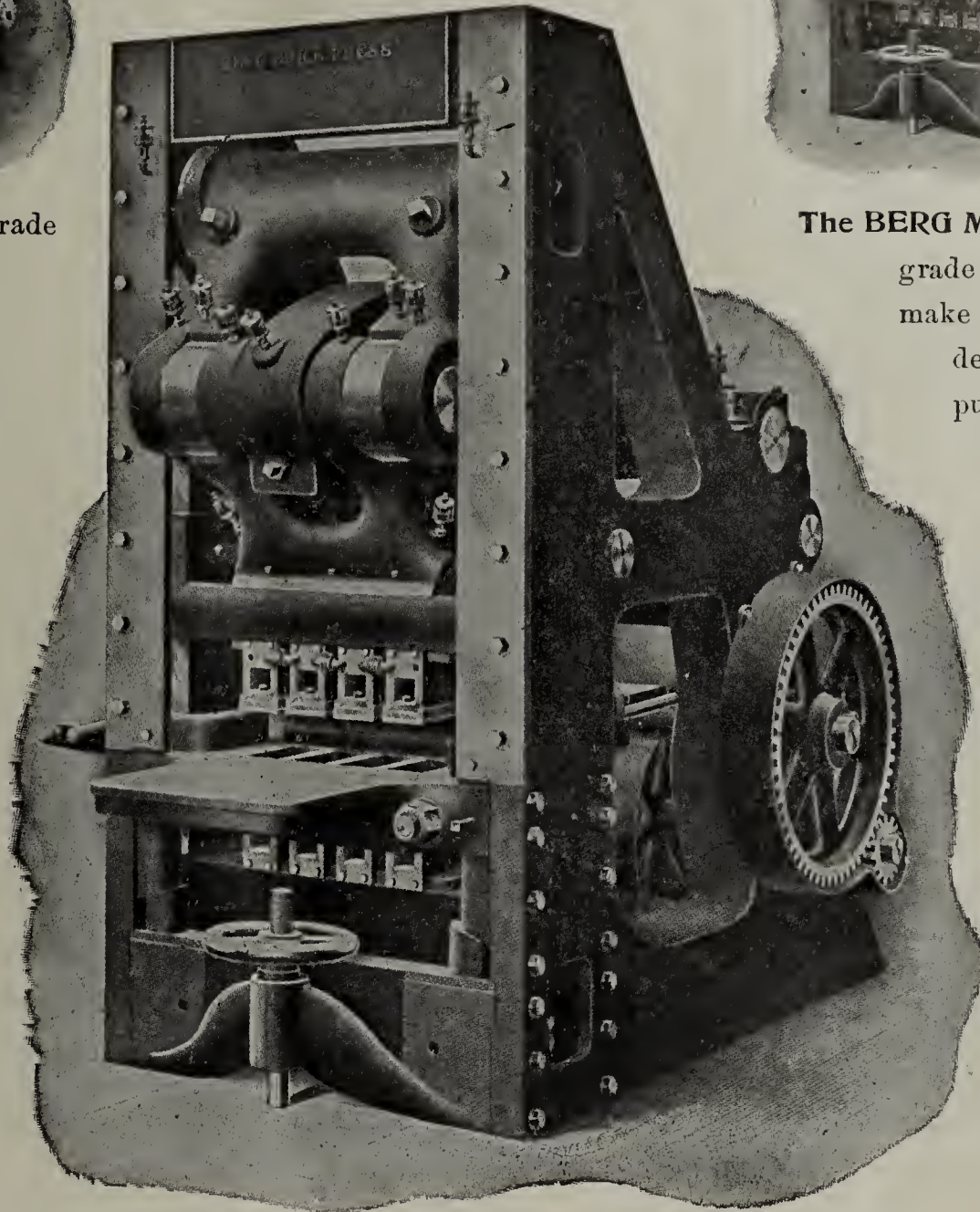


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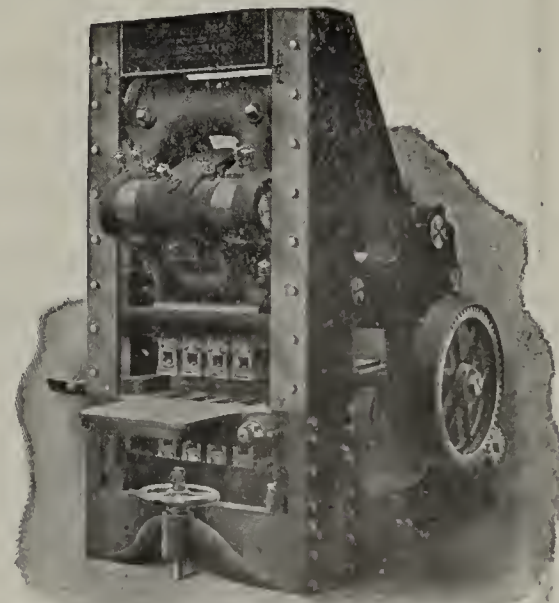
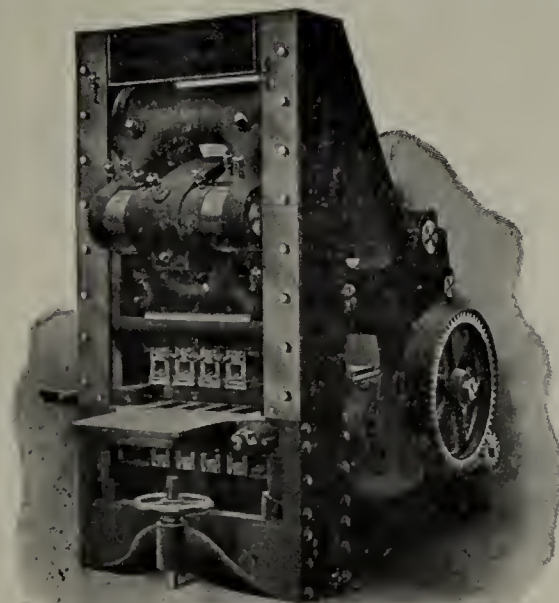
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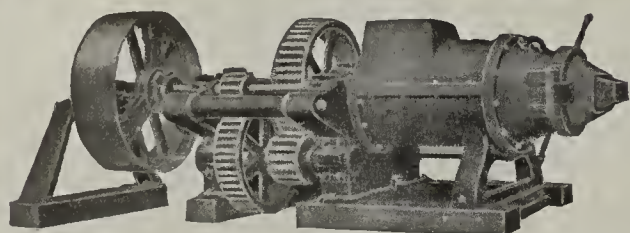
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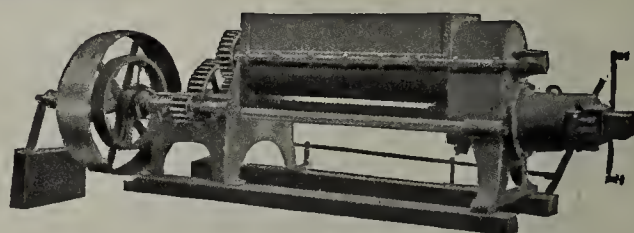
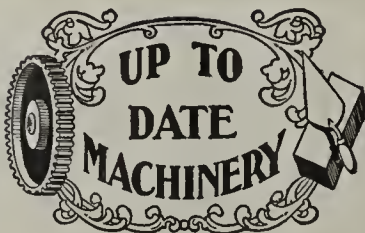
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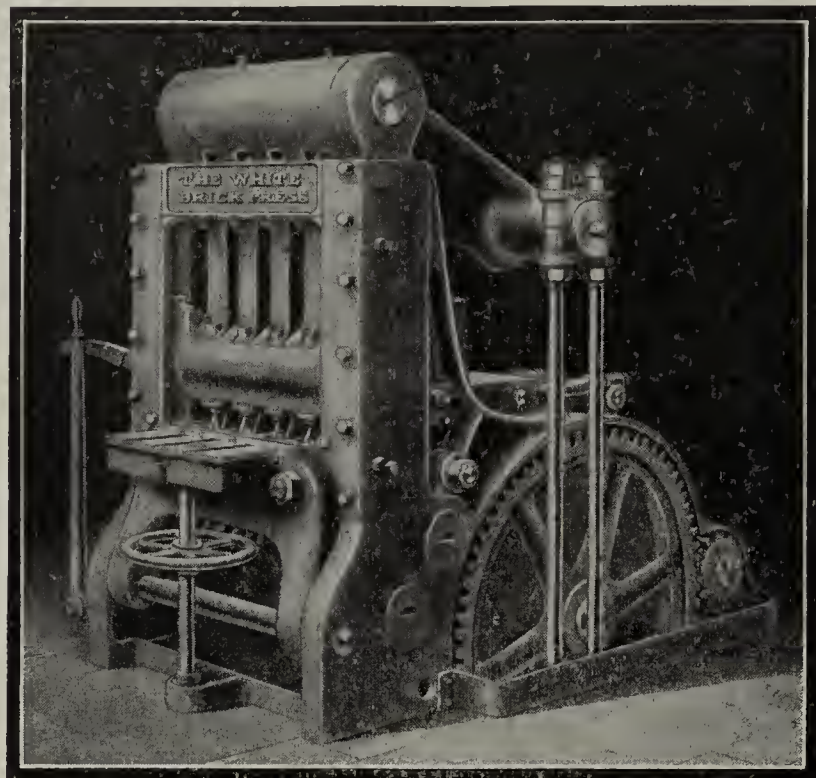
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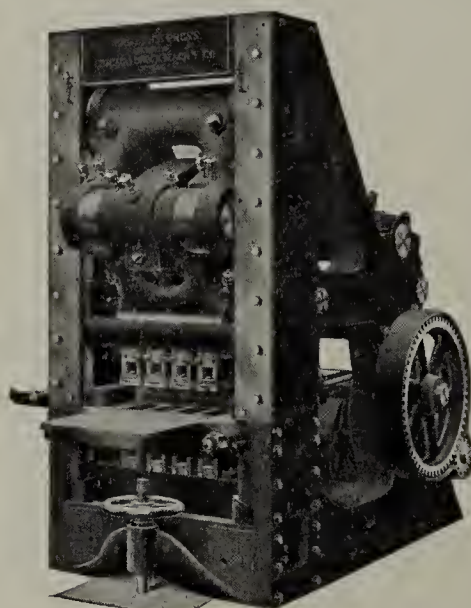
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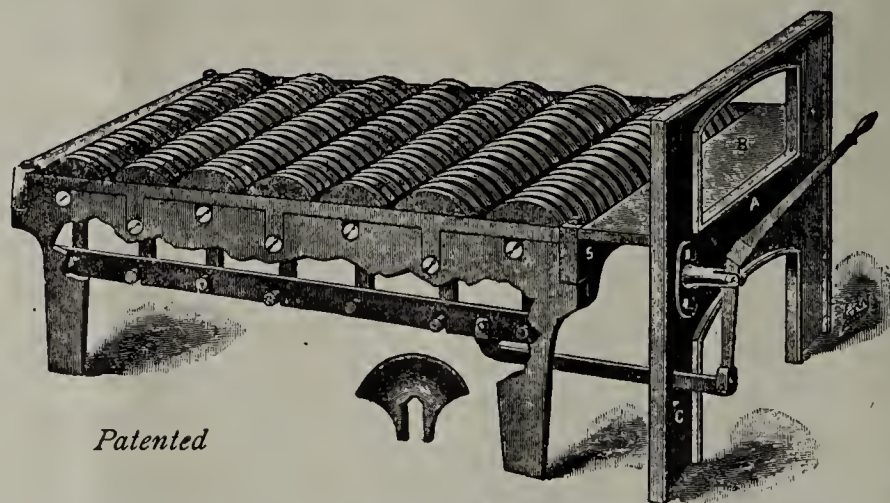
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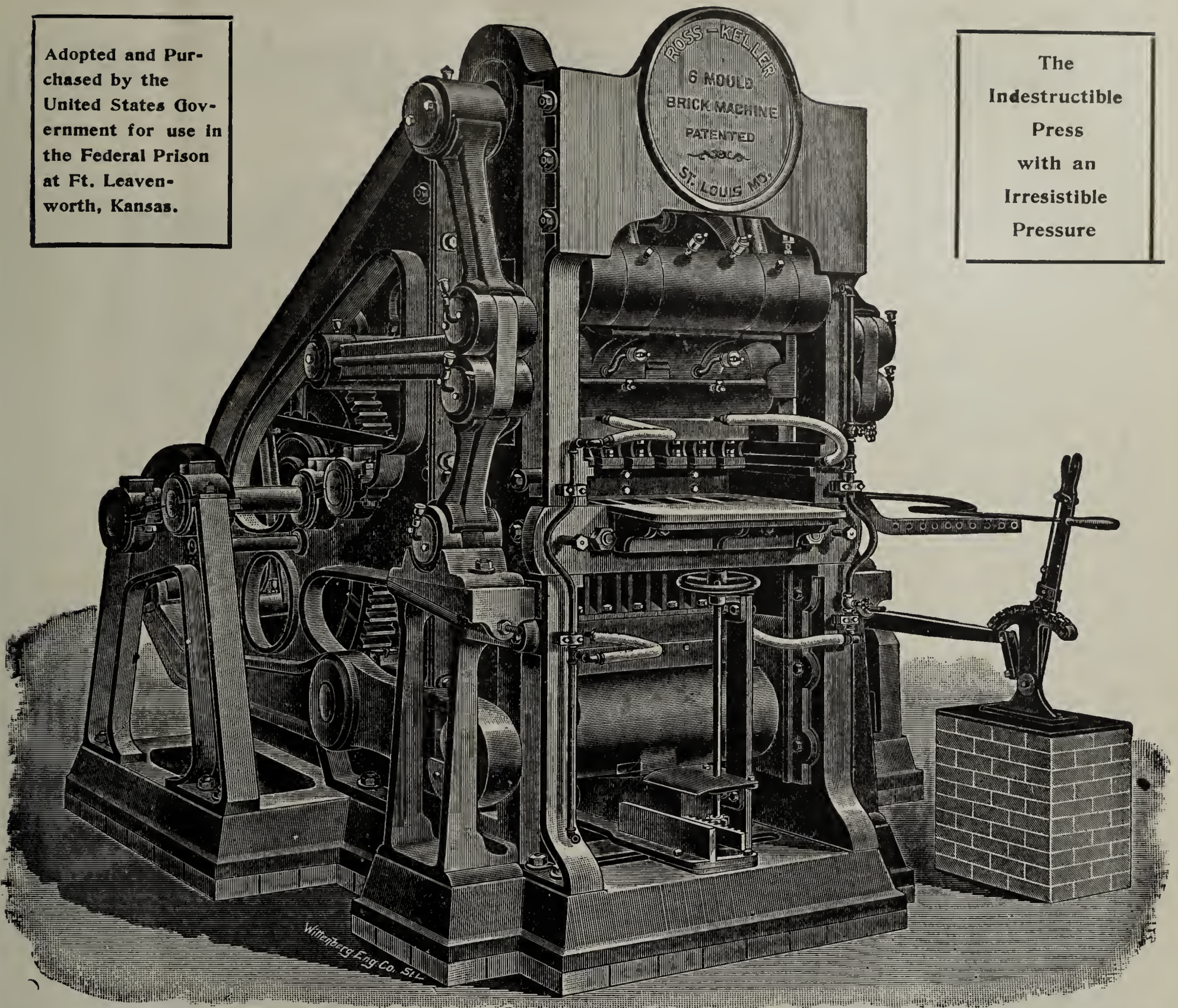
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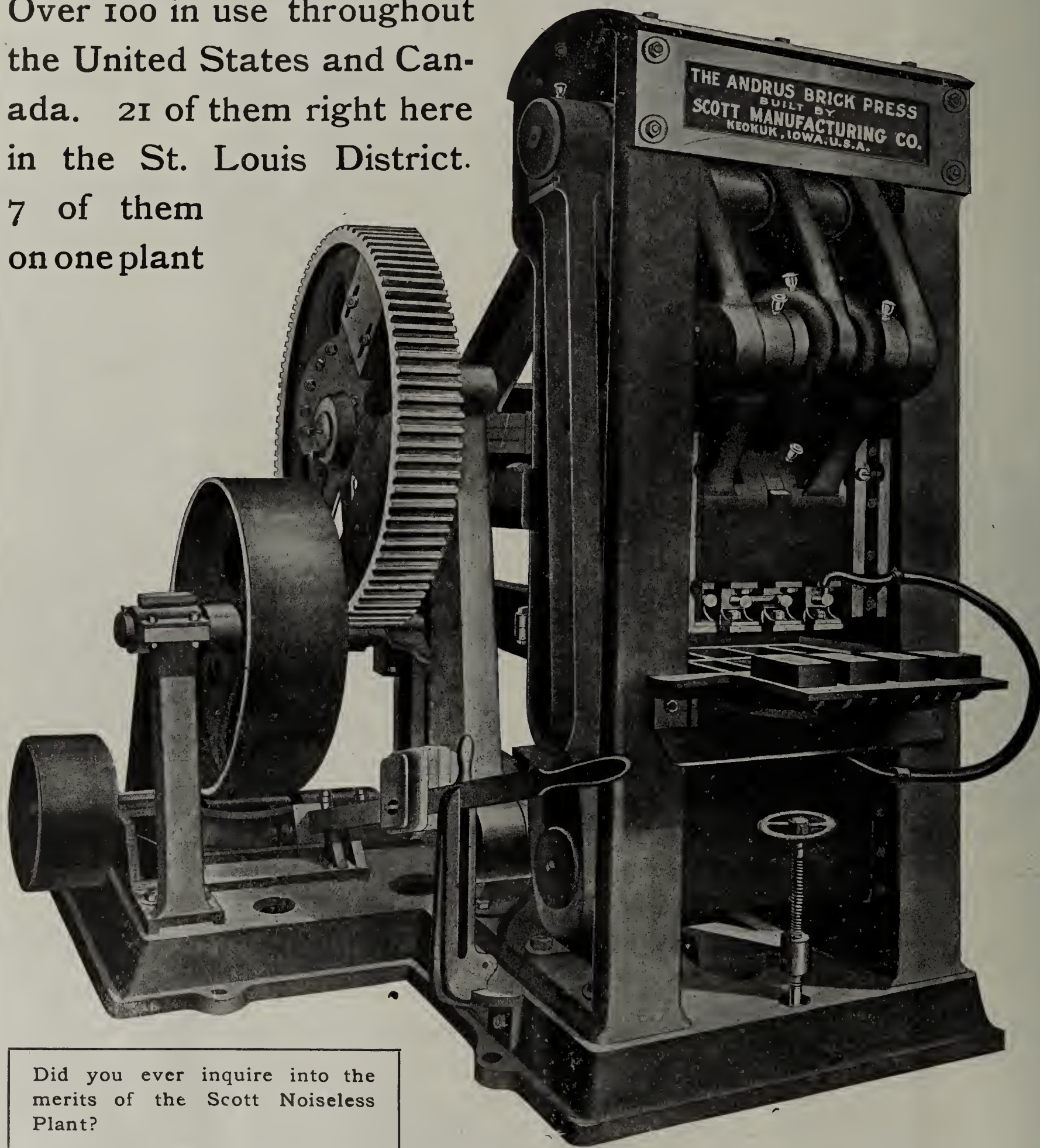
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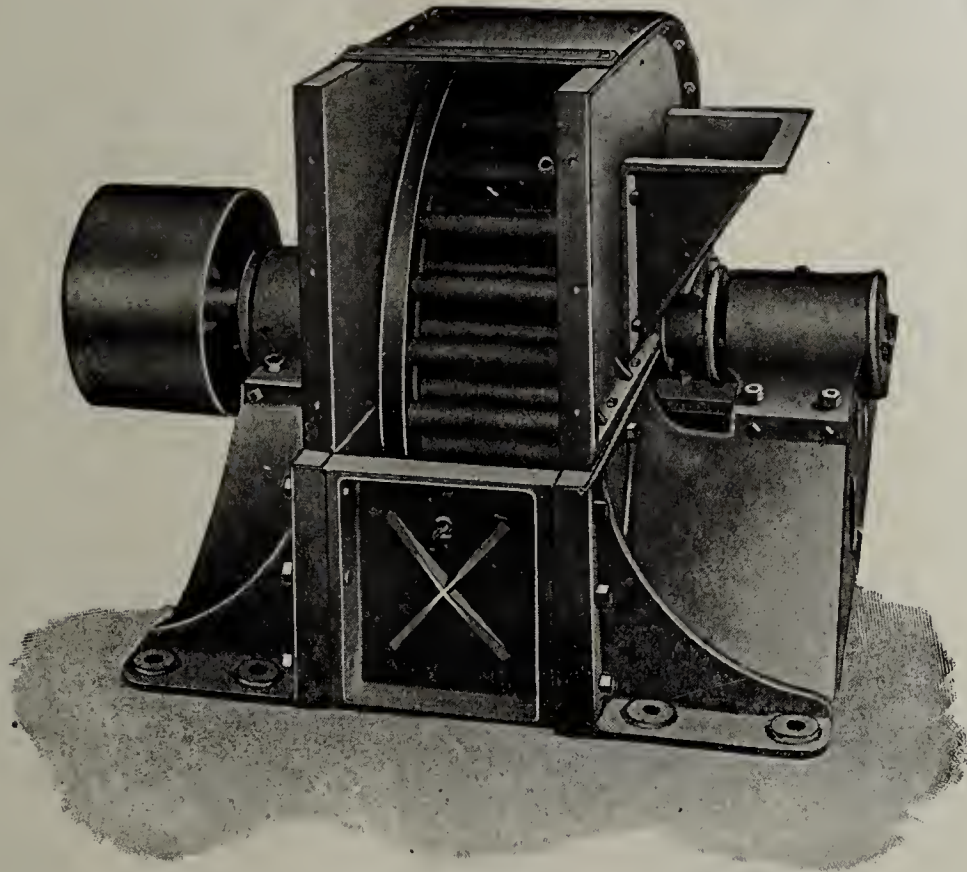
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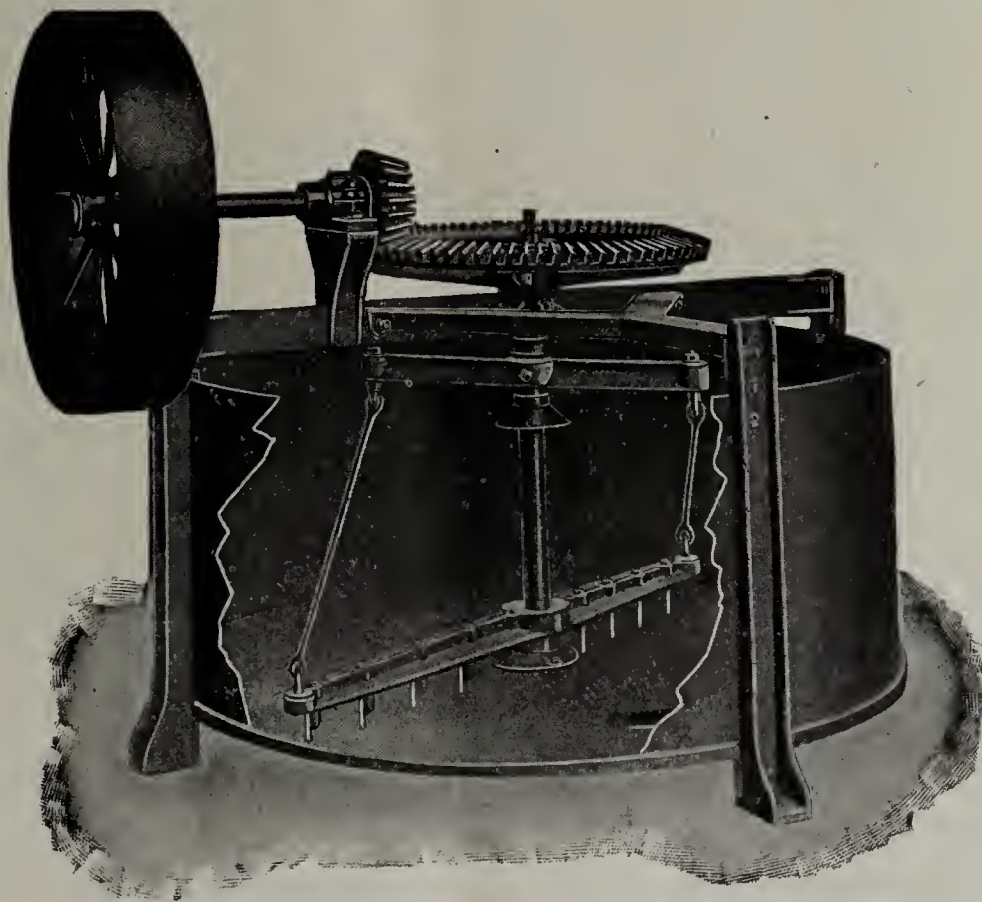
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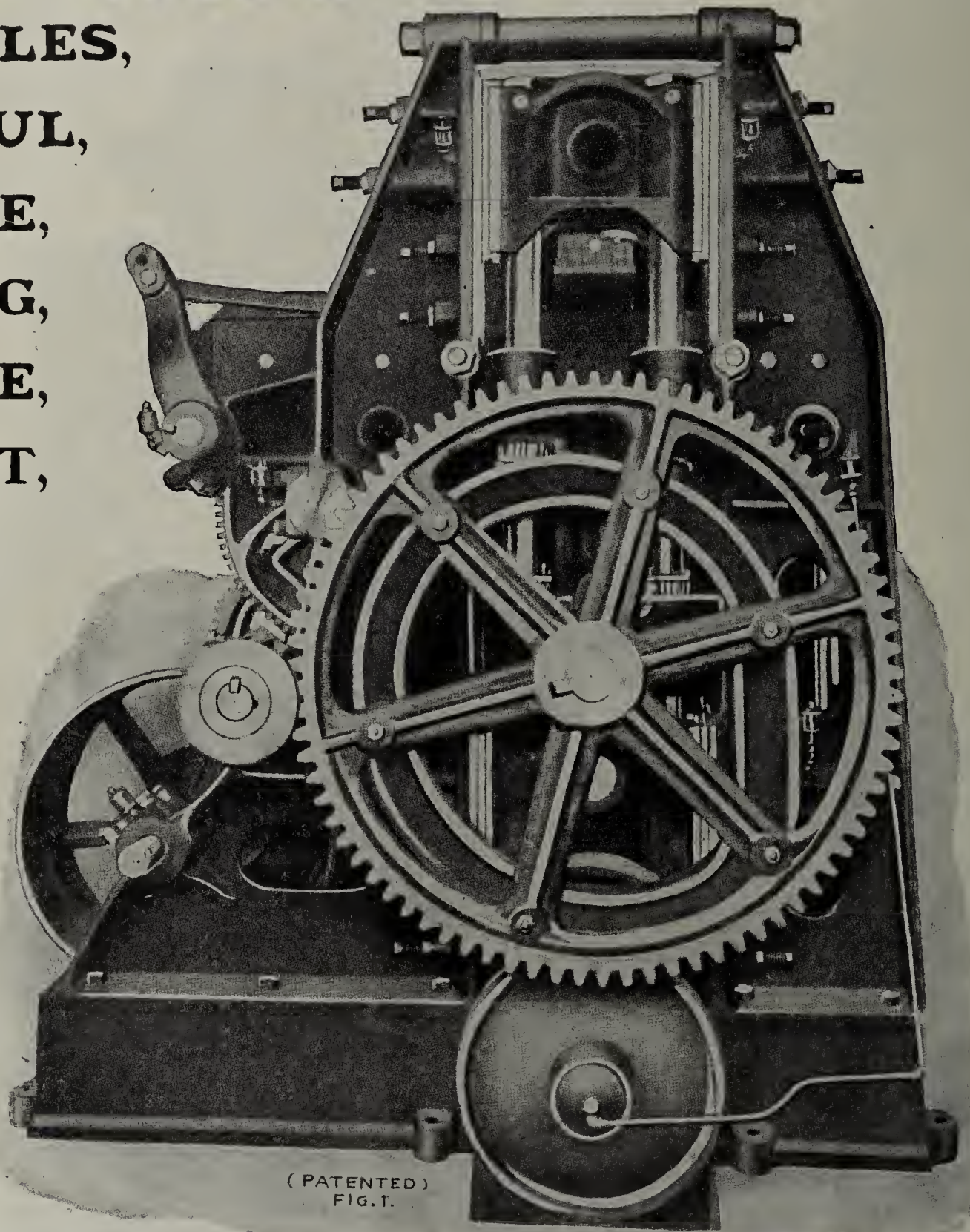
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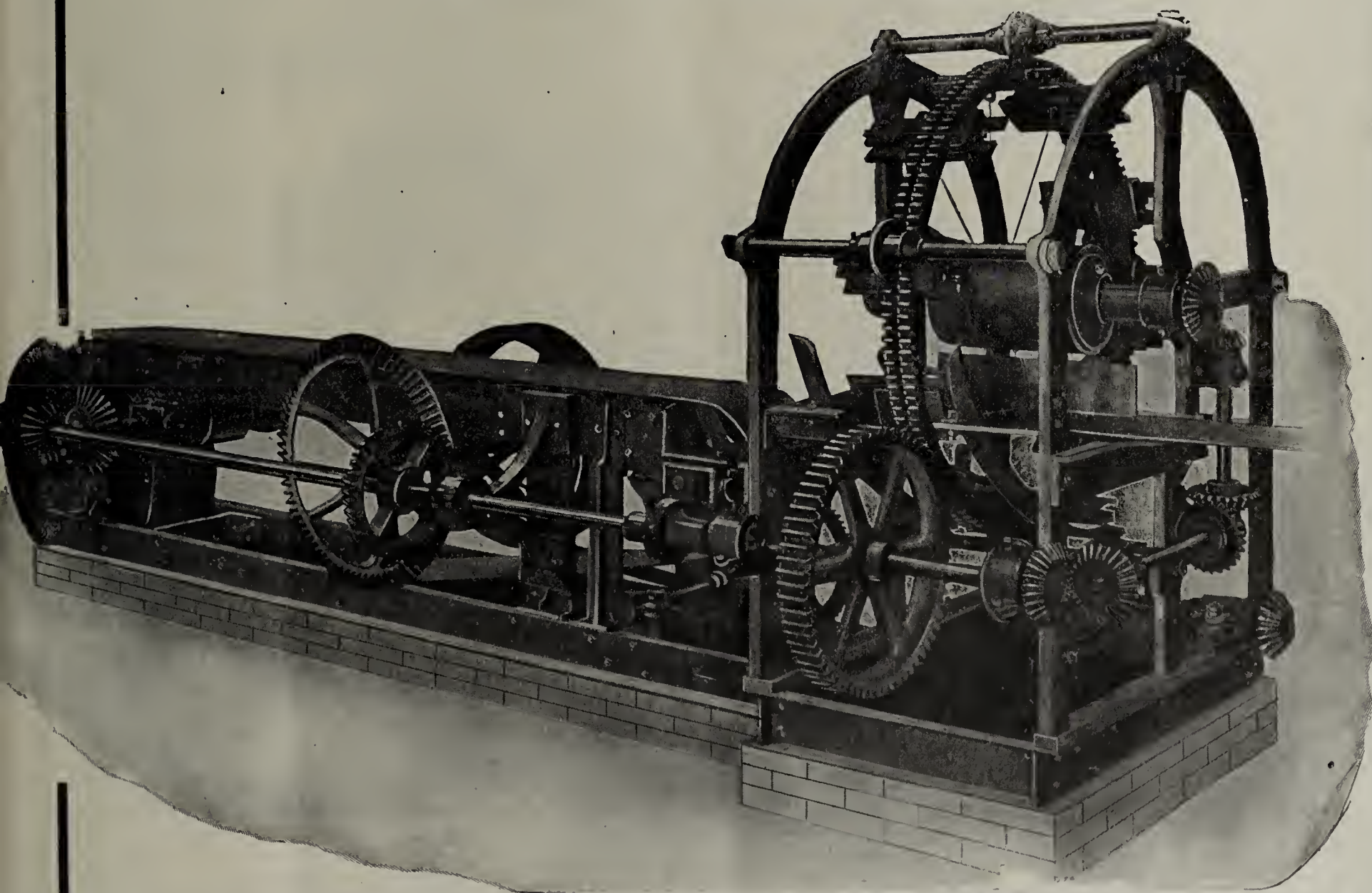
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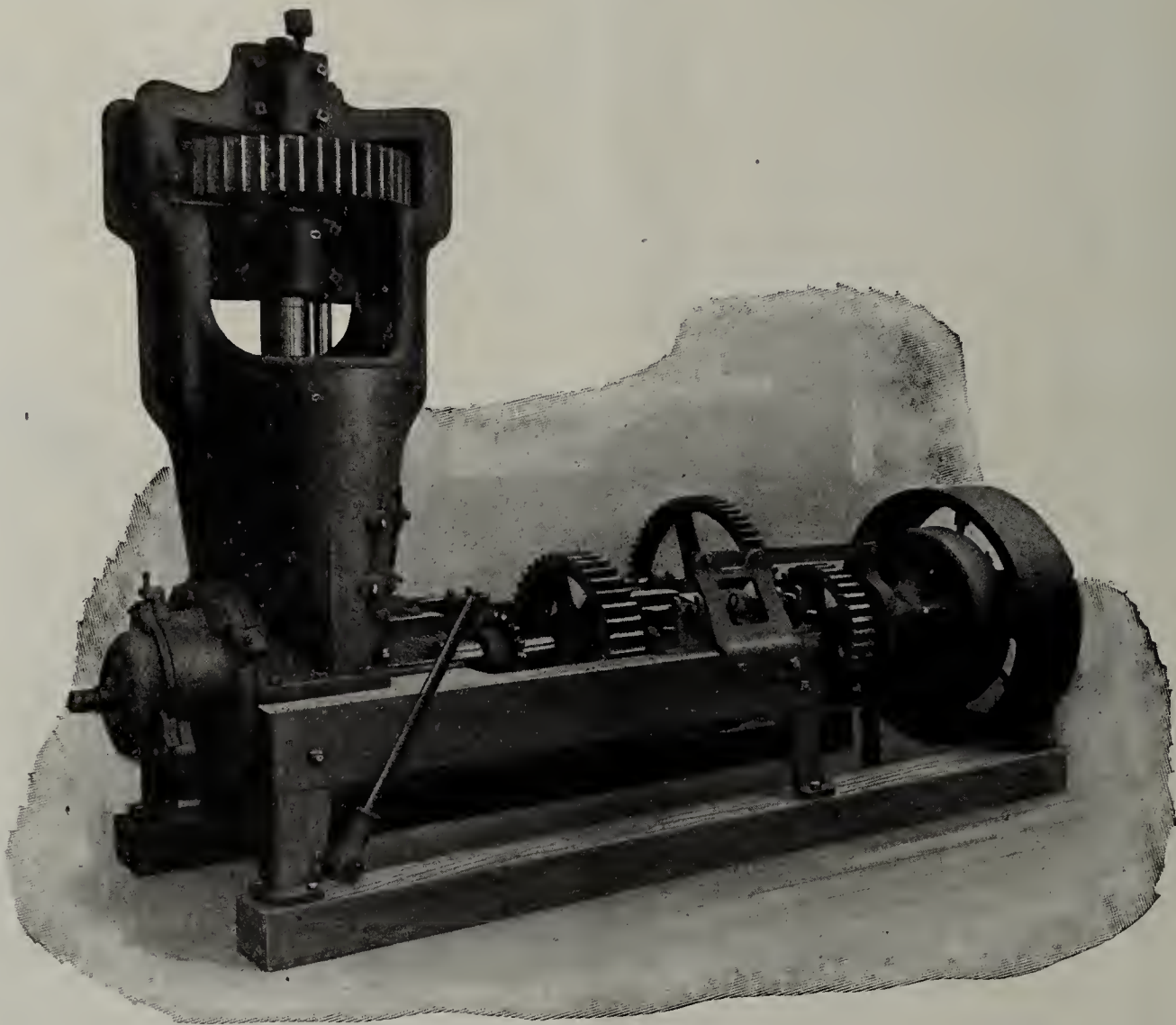


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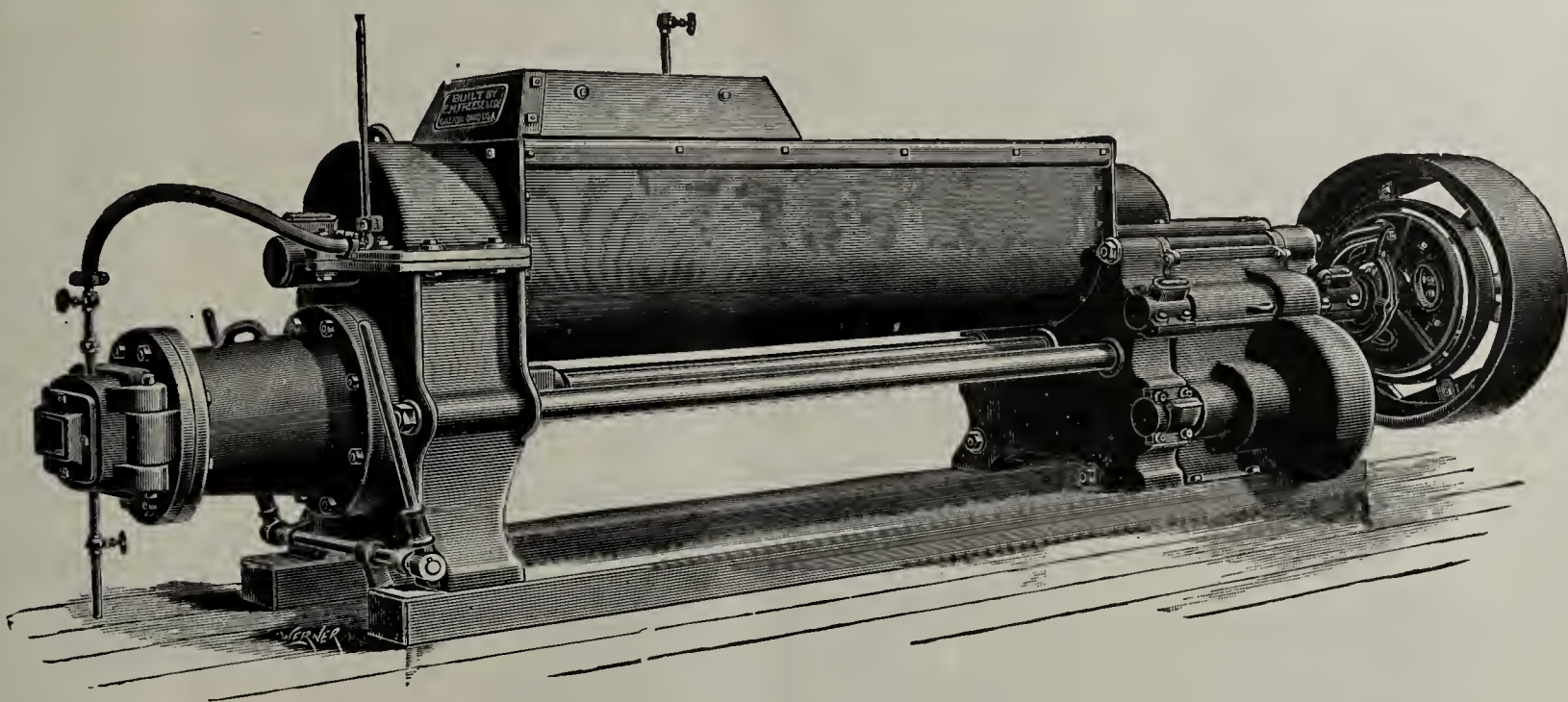
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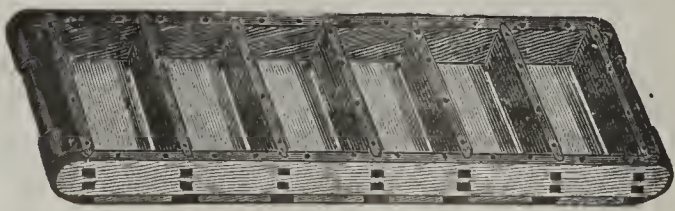


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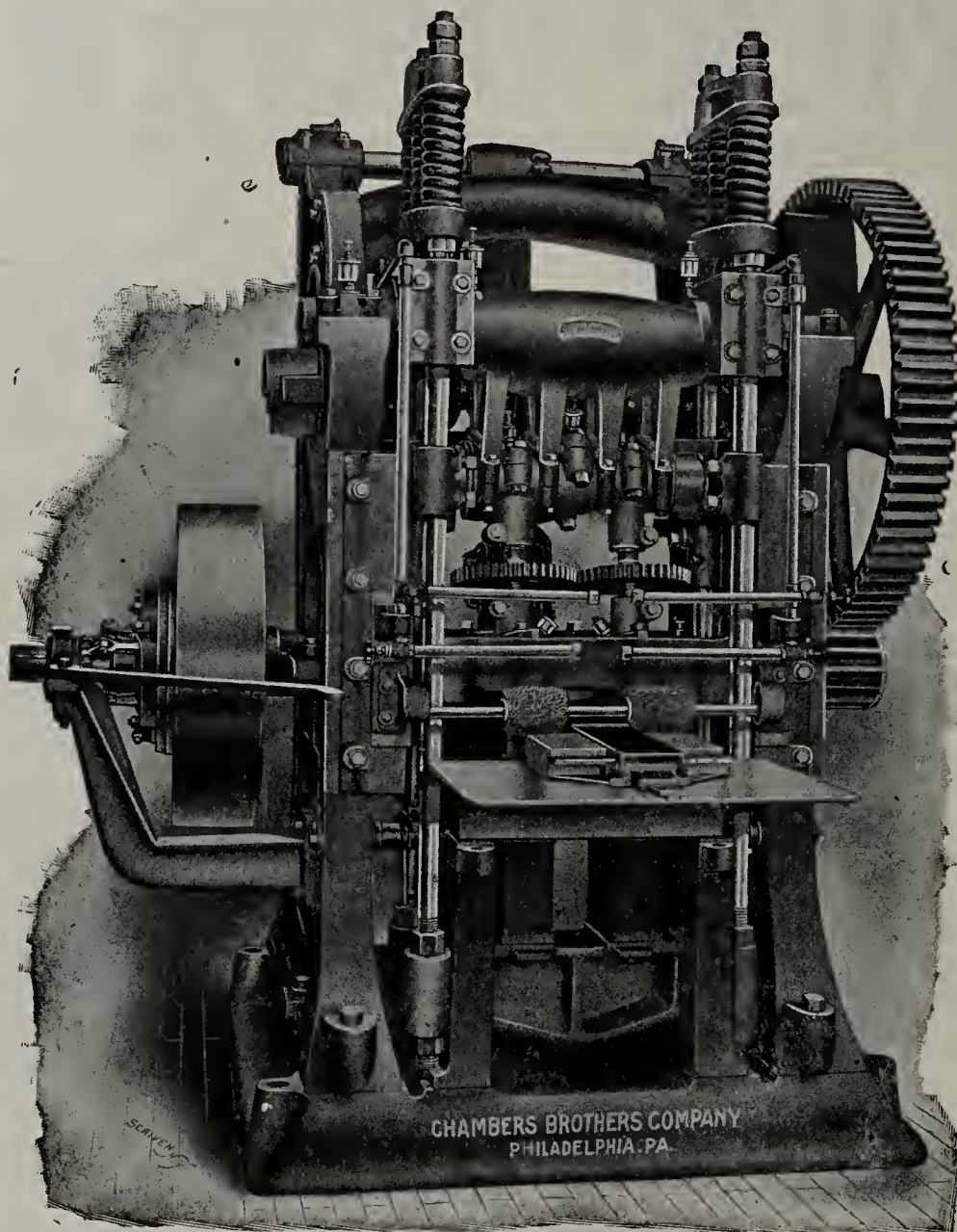
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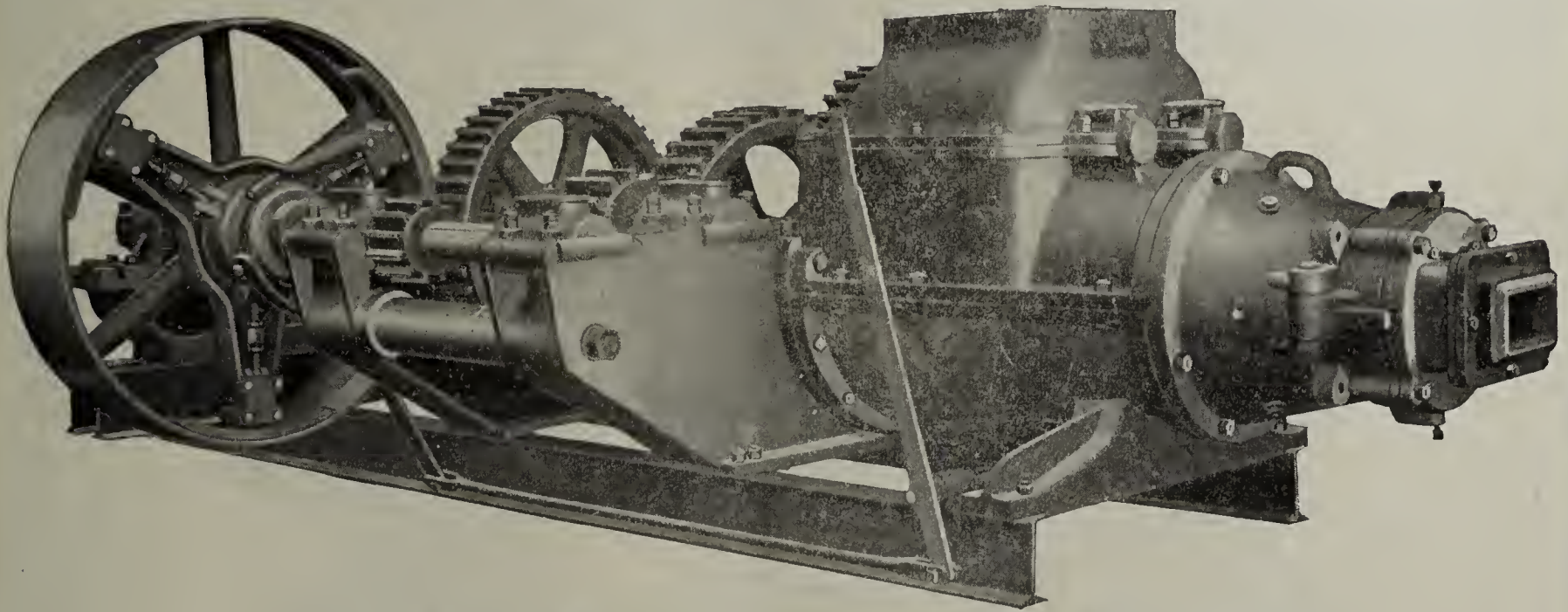
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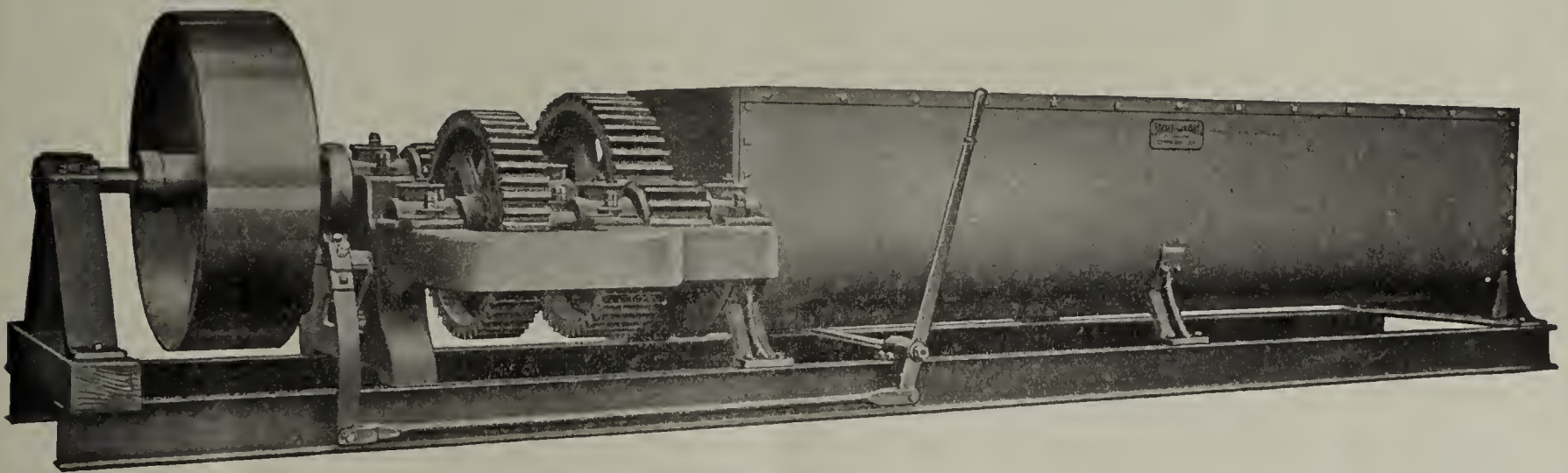
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Heavy Shafts and Large Faced Gears

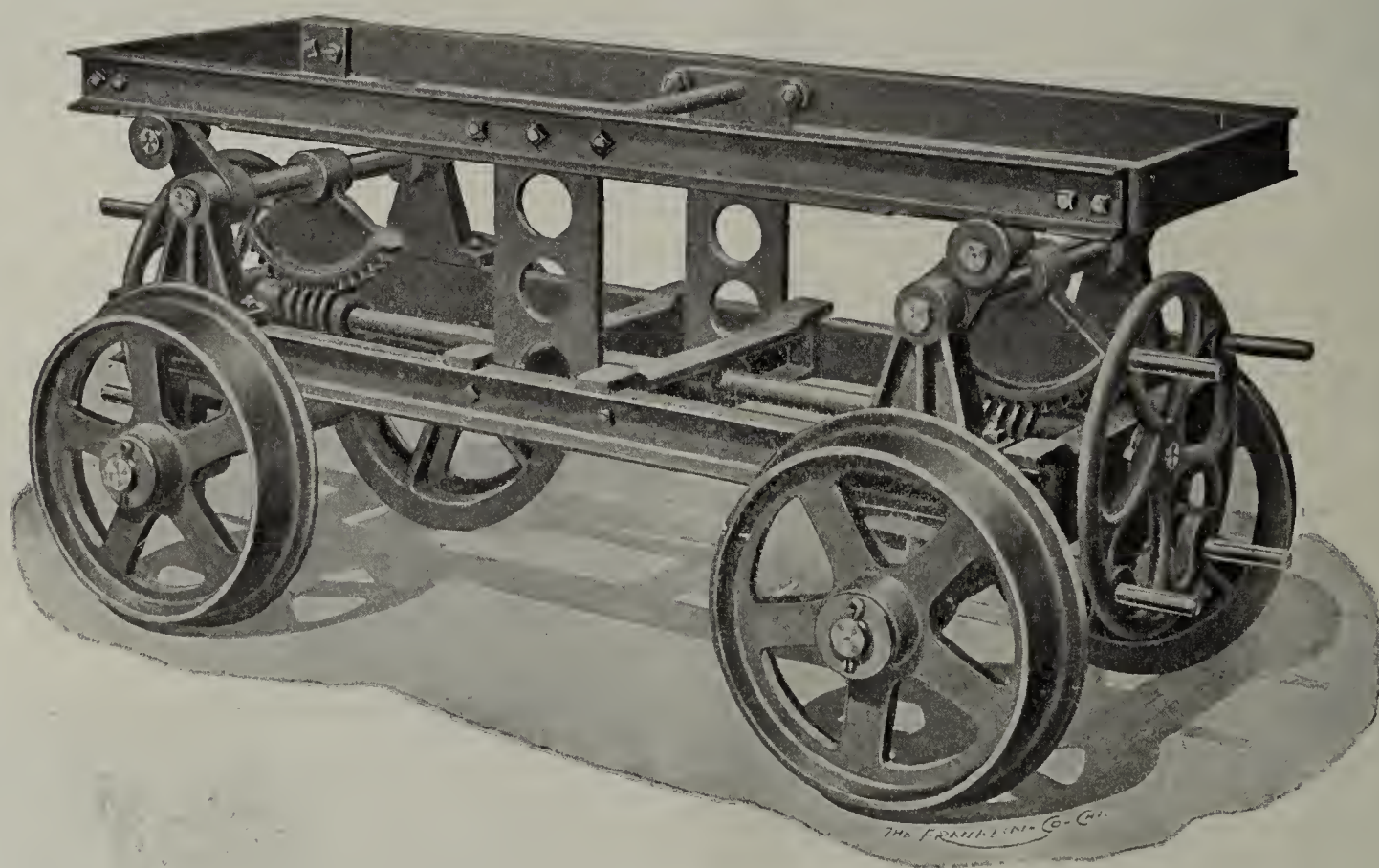
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FOR OPEN AIR SYSTEM OF DRYING



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CHICAGO, MAY 30, 1907.

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By James F. Hobart, M. E.

The silo system of manufacturing sand-lime brick is the mixing of sand and lime in the proper proportion, then allowing the two materials to remain in contact with each other, in a bin or silo, for a length of time which warrants the complete hydration of any lime particles which may have passed the mixing machinery and still remain in the unhydrated, or "raw" state. When unhydrated lime in lumps of any size gets into the hardening cylinder, then the brick will be "swelled," "bulged" or even broken by the swelling of the lime particles in the hardening cylinder.

By allowing the mixed material to remain in a moistened condition for a period ranging from 4 to 48 hours, all the lime will become hydrated, and swelled bricks will be unknown. This system is applicable to all methods of making sand-lime brick, either from raw, or from hydrated lime though the so-called "dry system" employed when commercial hydrated lime is used, must be modified somewhat in order to use the silo method of handling mixed material.

When the straight "dry method" is used, the lime and sand are brought together in the proper proportions, and passed through the necessary mixers, from which the material is carried directly to a finishing mixer which delivers it to the press. The water necessary for the proper working of the material in the press, is all added in the finishing mixer. The process is entirely without water up to this point, hence the name which is characteristic of the method.

When a proper hydrated lime can be obtained, very good brick are made by this method, but there must be no unhydrated particles in it, and no particles of lime which will not pass through a grading screen or sieve of 100 meshes to the linear inch. Failing in either condition, troubles of many kinds await the brickmaker. When there are lumps of unhydrated lime, the brick burst, and "daddy's bean patch" is reproduced in miniature on every brick containing a bit of lime near the surface of the brick, in the condition named. When unhydrated, but very finely pulverized lime is worked into the brick by the dry process, or by the wet process, either for that matter, the bricks will swell uniformly in each of the three dimensions and in several instances in the experience of the writer, the brick have thus expanded to the extent that it was possible to pull

the car from underneath the bricks, which remained suspended in the upper portion of the hardening cylinder.

The brick thus "expanded" proved rather soft, but in some instances, where the hydration was quickly finished, and before much hardening had taken place, the brick were fairly good, though over size in each dimension. In other cases, where the lime had not received as much hydration, previous to being pressed in mixture, the brick were torn to pieces by the internal pressure of the expanding lime, and the only remedies found, were to either reject the slow hydrating portions of the lime, or, to adopt the silo method, and allow the mixture to remain in a moistened condition from 24 to 48 hours as the lime might require.

Some limes hydrate very slowly, others combine with water very readily. When the slow limes are used by passing the lime through a hydrator, the quick-hydrating portions are at once united with water, while the slower portions of the lime pass through the hydrator in lumps. The mere act of being tumbled through the hydrator causes the lumps of unhydrated lime to break up to a considerable extent, and small fragments of lime are broken off the larger pieces by the tubemill-action of the hydrator, pass into the hydrate through the screen, and find their way into the brick, only to hydrate in the hardening cylinder, and burst some of the brick.

When the above is the case, the only resource, if the slow-hydrating lime must be used, is to have resource to the silo system, or method, and wet the mixture as soon after mixing as possible, and then allow the mixture to remain in storage until the slow lime shall have completely hydrated—usually from 24 to 48 hours, as noted elsewhere. When hydrated lime must be treated thus, in order to hydrate the slow portion of the lime, it is only sensible to dispense with the previous hydrating and grind up the lime without first hydrating a portion, then pass through the mixer and permit all the hydrating to be done in the silo, instead of a small portion, as with the previous hydrating noted above.

When lime is first hydrated, and then mixed with the sand, there is beyond doubt a considerable loss of hardness in the brick made from the pre-hydrated lime. The sand-lime brick is really an artificial stone and is hardened by the formation of calcium silicate between the particles of sand composing the brick. Calcium silicate is formed by a chemical union between the lime and the silica in the sand, which action is accelerated by the presence of steam and heat. Both these are evolved during the hydration of the

*Read at the last meeting of the National Association of Manufacturers of Sand-Lime Products, recently held in Chicago.

lime, therefore what more reasonable to expect than that a better brick can be made when the hydration of the lime is accomplished in contact with the sand; and the steam and heat act directly against the sand, instead of being lost in the atmosphere, as is the case when the lime is previously hydrated. The brick made from lime mixed with the sand and then hydrated, have a smaller absorption than the brick made from pre-hydrated lime. The brick are also harder, and less lime is required to obtain the same results, when previous hydration is dispensed with and the lime is used "raw."

It is vitally necessary, in making sand-lime brick by any "system," or "method," that the lime be first reduced to an impalpable powder, and then coated over the entire surface of every particle of sand. The means employed to obtain this, are not arbitrarily fixed. Any method which produces results may be employed, but it is essential that the lime particles be made fine enough to pass through a screen of 100 meshes to the linear inch, and if the particles all passed readily through a screen or sieve of 200 meshes to the inch, better results would be obtained.

As stated, the means employed for reducing the lime to this degree of fineness, matter not, and a tubemill, or a dry pan, or any other method may be employed as desired. It becomes evident, that no more lime should be used than will thoroughly coat each and every particle of sand. In fact, should more than this quantity of lime be used, the strength of the brick is not increased thereby, and the unnecessary lime does no good, even if it is not really a source of weakness in the brick.

By using the wet, or silo method, the handling of the lime—when hydrated lime cannot be obtained—is much simplified. All that is necessary, is to run the lime through a crusher, then to the proportioning machine. When, however, the lime must be hydrated, before being mixed with the sand, then trouble roosts in the sand-lime factory and a horrible mess is the sure portion of the sand-lime brick man. When a crusher is used, the lime should be brought into the factory only about as fast as needed, and crushed and used immediately. In fact, it is the ideal method to take from air-tight storage each day only as much lime as will be needed in the factory that day, crush that amount of lime, and mix it with sand immediately, wetting the mixture as soon as it is mixed—in transit, in fact—and then running the wetted mixture direct to the storage bins for the completion of the hydrating process.

Experience has demonstrated that a Williams mill is about the best lime crusher that can be obtained. This hammer machine fitted with a feeder breaker, will handle all the lime necessary; a No. 1 machine proving ample for a factory making 40,000 brick each day of 24 hours; nine working hours. A factory thus handling lime can be made dustless—something utterly impossible when lime is hydrated on the premises and then made into brick.

For the purpose of storing the wetted mixture of sand and lime, all manner of receptacles have been constructed and used. The plain square bin is the earliest form of silo. The material fell into one of these bins from an elevator or conveyor, usually so placed that in order to fill the storage place a great deal of the mixture had to be shoveled over, the elevator discharge not being high enough to permit the bin filling more than one-half or two-thirds full. Circular bins have also been used with indifferent results, the great trouble being that it is hard to get the material out of a circular receptacle with a conical bottom, on account of the tendency of the material to lodge or clog in the cone-shaped bottom of the bin.

The best form of storage bin, is the long V-shaped receptacle, constructed with slides at the bottom for egress of the material, and a belt conveyor the entire length of the bin, upon which the material falls as it comes through the

slides. The calculations and sketches of the first of the V-bins ever built, were made by the writer while riding on a train between Washington and New York, and from drawings made by the writer, these bins were constructed at Glens Falls and Fort Edward, and in at least 20 other factories in the United States—and yet one or two parties claim to hold patents on these bins! Perhaps they do. Such a patent does not hurt the storage bins any, and a man might get out a patent on the moon if he should apply for one!

The writer has recently designed and installed V-shaped bins without the central dividing partition, and finds the elimination of the partition to be a great improvement. Instead of allowing material to fill one side of the bin while the other side is being emptied to the press, the overhead conveyor is so arranged with a hand-tripper that the material is dumped into one end of the storage bin while the seasoned material is being drawn from the other end of the bin to supply the press. Thus, it is only necessary to have the bin long enough to be able to store the mixture one or two days as may be found necessary.

The mixer employed has a great deal to do with the quality of the brick turned out by the silo method—or by any other method as well. As yet, no form of mixer has been found which will do the work of the tubemill or dry pan, and for making face brick, one or the other should be employed. The tubemill, properly constructed, is far preferable to the dry pan, although good work is done with the latter. The tubemill is preferable for the reason that it is a continuous performance, and with the silo method, it is desirable that the mixing be kept as even and continuous as possible.

Returning again to the mixture: the writer has found it desirable to use a single mixer, and prefers this type to the double shaft, two-speed machine which is so valuable in mixing clay. Sand-lime, however, is an entirely different proposition, and clay machines and methods frequently have to be radically modified in order to give satisfaction in handling a mixture of sand and lime. The mixer blades should be quite long. A length of 12 in. from center of shaft to end of blade, is desirable and the distance may be increased to advantage if a great amount of work is to be done with a single mixer, with four double blades to the foot.

For one or two 4-mold presses, the 12-in. blade will supply ample material, and will provide ample and even mixing. The speed of a mixer of this type, with 12-in. blades, may be from 50 to 70 r. p. m. In fact, it is the practice of the writer to run these mixers as fast as the gears can be made to run safely. At a high speed, with the long blade, the material is thrown from one blade to another in the upper portion of the mixer, thus securing an entire freedom from lumps caused by balling or rolling, as is frequently the case with double mixers. A mixer with 12-in. blades, and with 10 ft. of blade-covered shaft, is a very good size and may be used as a dry mixer for the first 5 ft., the water-pipe extending across the mixer in the middle of its length, the wet mixing portion being also 5 ft. in length. Of course, these proportions may be varied in case of need, the dry mixing being extended or diminished by merely moving the water-pipe, while the wet mixing is varied in an opposite direction from the change in the dry mixing. That is: the more wet-mixing length of machine, the less dry-mixing length and contrariwise.

It has for several years been the desire of the writer to erect a dustless sand-lime brick factory. A factory recently erected at Bois, Idaho, by the writer, for the Intermountain Building Material Co., through the American Clay Machinery Co., Willoughby, Ohio, is practically dustless, and this excellent quality is largely owing to the construction of the tubemill discharge and feed. The mill is one of the

Schmidt type, with a discharge hood, fitted by the American Clay Machinery Co., which prevents entirely the egress of dust at the discharge end of the mill.

A specially designed mixer, of the 24-in. type described above, was built underneath the circular discharge hood, and made dust-tight thereto. The elevator from mixer to bin was built for the first eight feet of height, in the form of a room, the mixer passing along in the floor of the room and the elevator chains and buckets ascending in one corner. Neither the mixer nor the elevator were inclosed except by the small room mentioned, which is possibly 6x8 ft. in size. From the ceiling of the room, the conventional elevator legs ascend to the upper portion of the factory, inclosing the chain and buckets in the usual manner. In this way, a large number of the usual elevator troubles are dispensed with. It is easy to get at the foot wheel of the elevator, and if the machine should become clogged, it is easy to shovel out the surplus material without having to work in restricted quarters as is the case when the ordinary elevator gets stopped up. There is no dust whatever from an elevator closed in this manner, and as the material is all wetted thoroughly as it issues from the tubemill, there is no chance for dust there.

The silo method is particularly easy to make dustless as the material is wetted as soon as possible and handled entirely in a moist condition to the point where it goes to the press. It is the aim of the silo-process man to add exactly the amount of water necessary, as the mixture issues from the tubemill, so that the material will be neither too wet nor too dry when ready for pressing after the time of storage for complete hydration has passed. Considerable skill is required to do this, also an intimate knowledge of the amount of water the lime will absorb and how much will dry out during the period of complete hydration. It requires a little practical experience to determine this point, then the operator seldom finds it necessary to add water in the mixer over the press. Neither does he find the material coming too wet, but just right for the making of first-class brick.

It is one of the advantages of the silo and wet methods that there can be a considerable variation in the amount of water added to the mixture, from time to time, and still the mixture comes to the press very evenly and correctly moistened. An explanation of this seemingly paradoxical statement is found in the peculiar manner in which the material is taken from the silo when it is to be pressed. With the V-shaped storage-bin in particular, the material is put into the bin in cone-shaped layers, but when the material is withdrawn for pressing it comes out in sections taken at right angles to the conical layers. That is: The material comes out in a mixture of the thin sections or layers, so if there be strata of too wet material, or too dry stuff, the delivery cuts right through both wet and dry, and, mixing them, the resulting material is neither too wet nor too dry, and is in the best possible condition for making first-class brick.

On the other hand, when material is mixed by the "dry" process, it is very difficult to wet the mixture evenly and as it goes direct to the press, there is no opportunity for the moisture to spread and equalize the wetness, hence the frequent delivery to the press of material too wet or too dry, to the great disgust of the press men and to the damage of the finished brick. When material varies in moisture, it is necessary to vary the depth of the press molds accordingly, for, the wetter the material, the more space the loose material must have in the molds, and, contrariwise, the drier the material, the more the lower pressure plates must be raised in order to prevent too much material from entering the molds, thereby causing the brick to "sandwich" and come out utterly worthless. When the material

varies in moisture so greatly as to become apparent in the color of the pressed brick, the hand wheel of the press must be kept moving with great frequency and the quality of the brick is sure to suffer for the reason that the drier the material the better the brick, the less absorption and the greater crushing strength. It is not possible to make as good a brick from wet as from dry material and the moisture should always be kept as low as will allow the brick to be taken from the press and piled upon the cars. Material which has stood over night with the proper amount of moisture, invariably goes to the press in better condition than is possible with freshly wetted material.

The writer has found from personal experience that the silo system or method produces better brick wherever it is used, even when a perfectly hydrated lime is used. Where the lime is only partially or incompletely hydrated, the silo method is a necessity, and where raw lime is used, the silo system produces the best sand-lime brick made. The following examples from actual practice point to the silo method as one possessing many advantages and few if any bad points:

I.—A factory, equipped with a tubemill, had no storage bins and hydrated the lime in cars placed in the hardening cylinder underneath the brick cars. The hydrate was mixed with the sand and passed without having been screened, into the tubemill, thence direct to the press, water being added over the press immediately before pressing the material. The lime was not ground, or screened in any way, but was passed direct from the measuring machine into the tubemill, thence to the press, being wetted just before the mixture passed to the press.

The resulting brick were far from satisfactory, the brick being quite soft and lacking in hardness and water-resisting qualities. A silo was added to the factory equipment, and the mixture allowed to remain in storage, after being wetted, for 24 hours. The result was that the brick came out much harder, possessed greater crushing strength and absorbed less water. It was probable that the lime was not completely hydrated when the brick went to the cylinder, before the silo was installed, and this being the case, the hydrating process swelled the lime, thus making the bricks slightly larger and more porous. Consequently the material was forced apart slightly by the swelling of the lime and the porosity of the bricks increased enough to make them appear softer after the curing process was finished.

The installation of a silo allowed the lime to hydrate perfectly before the mixture went to the press, thus preventing the swelling of the brick to the detriment of the qualities of hardness and porosity. The addition of water immediately after the mixture left the tubemill, permitted a much more uniform mixture of water and the resulting material was smoother, freer from lumps, and more uniform than ever before and the quality of the brick was enhanced accordingly.

II.—A factory was equipped with a Freese mixer, an American hydrator and a supplementary mixer or "agitator" for a final dressing of the material just before it went to the press. A very large silo was also included in the equipment of this factory, but the management had an idea that the silo was a useless piece of apparatus and tried the experiment of running the material direct from the mixer to the press. The results were not at all satisfactory. In fact, the brick were worthless.

It was necessary to use a very soft chalky lime and the perforations in the hydrator screen had to be increased to $\frac{1}{8}$ -in. in width in order to get the required amount of lime through the hydrator. Necessarily many bits of hydrated lime passed through the screen and went through the mixer in which machine the lumps received the necessary amount of water for hydration. The period of stor-

age in the silo enabled good brick to be made, as far as hardness was concerned, but lime spots still remained, there being no way of pulverizing the lime lumps after they were mixed with the sand—there being neither dry-pan or tubemill in this factory. The silo obviated all bursting of brick, or “popping,” as it is often called, but it could not rid the brick of the lime spots. An air separator and a hammer mill was finally installed for finishing the lime after it had passed the hydrator. The silo system proved the salvation of this factory, for another plant nearby was equipped with the same lime hydrating and handling processes, but without the silo. This factory never turned out as hard brick as the one which was equipped with the silo.

III.—A factory, which was equipped with a hydrating machine and a tubemill, had provision for adding water only at the point of delivery of the material into the press hopper. The lime proved very slow hydrating, frequently requiring from 24 to 48 hours for complete hydration.

The hydrating machine passed small fragments of caustic or partially hydrated lime through its screen and these particles were ground very fine in the tubemill, but when wetted in the mixer above the press, proved capable of expansion in the brick, and “pops,” while not pronounced on account of the fine grinding of the lime in the tubemill, took the form of raised portions in the surface of the brick and in many instances caused a regular and pronounced increase in the size of the bricks which were enlarged in every dimension. This action not only caused the regular enlargement of the bricks above-mentioned, but it also caused a universal disintegration of the brick which resulted in a softening of the entire body of pressed material through the movement apart of the sand particles, caused by the expansion of the fine lime particles.

The addition of a mixer at the tubemill discharge, and a storage-bin or silo for the mixed and wetted material, where the mixture could be stored from 24 to 48 hours, proved a complete remedy for the very slow lime which had to be handled in this plant. It was subsequently found that by eliminating the hydrating machine, crushing the lime in a hammer machine, and proceeding otherwise as with the hydrate, that a better and stronger brick could be made than when the hydrate, or partial hydrate, was used. A Williams hammer pulverizer, with a breaker-feeder attachment, proved all that was necessary for preparing the lime for the tubemill.

CARNEGIE'S GREAT SCHOOL HAS ONLY ONE BRICKLAYER.

The School of Bricklayers, Pittsburg, intended to be one of the most important departments of the great \$10,000,000 technical schools which Andrew Carnegie founded, has one scholar. The daily routine which the future knight of the trowel goes through and the staff of instructors maintained solely for him is causing much comment.

When Mr. Carnegie founded the technical schools he insisted that the departments first opened must be those for the purpose of teaching young men to become expert artisans. Bricklaying looked as if it might be popular here, and the school of bricklayers was the first in commission. While other departments were quickly filled up with scholars, the bricklaying game didn't seem to appeal to Pittsburg's young men, but finally one student applied.

After passing the necessary examination, Daniel Chisholm was enrolled and began his studies at the school, after paying his fee of twenty dollars a year. To teach prospective bricklayers there had been engaged by the school a professor at a salary of fifteen dollars a day and an expert bricklayer, who receives six dollars, or the union wage.

AUSTRIA'S MAGNESITE INDUSTRY.

A report from Consul-General W. A. Rublee at Vienna states that the very considerable export of calcined magnesite from Austria to the United States, amounting during the calendar year 1906 to nearly 53,000 tons net weight from the Vienna consular district alone, has attracted general attention to this industry, and new magnesite mines are being located in several parts of Austria. Mr. Rublee thus describes the industry:

At present the Veitscher Magnesitwerke Actiengesellschaft is the principal company operating magnesite mines and is enjoying extraordinary prosperity, its shares, which have a par value of 400 crowns (crown=20.3 cents), now selling as high as 1,140 crowns. This great rise in the company's shares has taken place mainly in the last year and is due to the continually increasing sales of magnesite to the United States.

Magnesite was discovered in the province of Styria, Austria, in the early eighties by Carl Spater, of Coblenz, Germany, who had acquired some property near Veitsch, Styria, which was supposed to contain manganese ore. In the course of exploiting this property the yield of manganese was not found to be satisfactory, but another substance was found which turned out to be valuable for fireproofing purposes and was later called magnesite owing to its large percentage of magnesia. Elaborate experiments were made with it by the Alpine Monttangesellschaft, one of the principal iron and steel companies of Austria, and its uses were discovered. The first magnesite was produced in small quantities in 1882, but its production on a large scale began in 1890, when shipments were first made to the United States. In 1897 the Veitsch property was organized into a stock company with 2,000,000 crowns (\$400,000) preferred shares and 6,000,000 crowns (\$1,200,000) common shares, the preferred shares to pay 7½ per cent interest, guaranteed. This dividend was soon raised to 10 per cent, and has been paid on preferred and common shares alike for several years past. Carl Spater, of Coblenz, Germany, retains the controlling interest in the company and a Vienna bank owns a large part of the remainder of the shares.

Magnesite mines were operated, in competition with the Veitsch mines, at Eichberg, lower Austria, for a number of years but were acquired by the Veitsch company in March, 1905. There are also magnesite mines in Hungary, which operate under a cartel agreement with the Veitsch company. The Veitsch company is acquiring other mines in Styria and is desirous of maintaining a monopoly of the business in Austria. At present, however, there are two or three independent concerns opening up magnesite properties in Austria and in Hungary, and there is some prospect of a lively competition after the furnaces are started within the next six months.

BRICK WELL FLOATS AWAY.

The great strength some times exhibited by brick masonry well laid in good cement mortar is shown by a brick cistern seven feet in diameter by ten feet deep, which, according to the Engineering Record, was undermined by a flood at Terra Haut, Ind., and floated away for some distance without breakage of any part of the masonry or water gaining access to the interior.

THREE TIMES AS MUCH TIMBER USED EACH YEAR AS THE FORESTS GROW.

Every person in the United States is using over six times as much wood as he would use if he were in Europe. The country as a whole consumes every year between three and four times more wood than all of the forests of the United States grow in the meantime. The average acre of forest lays up a store of only 10 cubic feet annually, whereas it ought to be laying up at least 30 cubic feet in order to furnish the products taken out of it. Since 1880 more than 700,000,000,000 feet of timber have been cut for lumber alone, including 80,000,000,000 feet of coniferous timber in excess of the total coniferous stumpage estimate of the Census in 1880.

we have the advantage of all the lessons which Europe has learned and paid for in the course of a century of theory and practice.

Lest it might be assumed that the rapid and gaining depletion of American forest resources is sufficiently accounted for by the increase of population, it is pointed out in the circular that the increase in population since 1880 is barely more than half the increase in lumber cut in the same period. Two areas supplying timber have already reached and passed their maximum production—the Northeastern States in 1870 and the Lake States in 1890. Today the Southern States, which cut yellow pine amounting to one-third the total annual lumber cut of the country, are undoubtedly near their maximum. The Pacific States will soon take the ascendancy. The State of Washington within a few years



These are some of the remarkable statements made in Circular 97 of the Forest Service, which deals with the timber supply of the United States and reviews the stumpage estimates made by all the important authorities. A study of the circular must lead directly to the conclusion that the rate at which forest products in the United States have been and are being consumed is far too lavish, and only one result can follow unless steps are promptly taken to prevent waste in use and to increase the growth rate of every acre of forest in the United States. This result is a timber famine. This country is today in the same position with regard to forest resources as was Germany 150 years ago. During this period of 150 years such German States as Saxony and Prussia, particularly the latter, have applied a policy of government control and regulation which has immensely increased the productivity of their forests. The same policy will achieve even better results in the United States, because

has come to the front and now ranks first of all individual states in volume of cut.

At present but one-fifth of the total forest area of the United States is embraced in National Forests. The remaining four-fifths have already passed or are most likely to pass into private hands. The average age of the trees felled for lumber this year is not less than 150 years. In other words, if he is to secure a second crop of trees of the same size, the lumberman or private forest owner must wait, say, at least one hundred years for the second crop to grow. As a rule, such long-time investments as this waiting would involve do not commend themselves to business men who are accustomed to quick returns. But the States and the Nation can look much farther ahead. The larger, then, the area of National and State control over woodlands, the greater is the likelihood that the forests of the country will be kept permanently productive.

RETROSPECT, INTROSPECT AND PROSPECT.*

By Harry de Joannis, Chicago, Ills.

I expect that you will grant that I have chosen a subject which allows me considerable latitude and longitude. That is good for me, inasmuch as, though large bodies move slowly, they require considerable space for their moving. At this season of the year, it is permitted to everyone to look, as Janues did of old, both ways, and endeavor to gain from this scrutiny some idea of progress made and possible.

From the experiences of the Past, we are enabled to so direct our actions in the Present that we may obtain rewards in the Prospective. A retrospective glance through the early days of the clayworking industry on the American continent is interesting but does not take us very far back. It is true that our industry is an ancient one and that it is a regular thing for public officials and after-dinner orators to address us with reference to the brick-making art in the time of the Phoenicians, the Egyptians and the Chinese, but that is all the good that we have ever derived from the study of their methods of brick-making. Their conditions were different, their clays were dissimilar from ours and their methods of manufacture were of the crudest. From them we can only claim the antiquity of our art. Leaving the ancients and coming down to the past two centuries, we find that even until recent years much advancement had not been made in the methods of manufacture. Many of you present can remember the days of hand-molding, the introduction of hand-power and horse-power machinery, the taking of contracts and the making of the brick to fill them close to the point of erection of the structure; the scene of operations continually being changed. The reason for this slow progress was that architectural standards were not high; lumber offered cheap structures with greater facility of ornamental design; and brick was sought after and used only where durability, at less expense than could be obtained by the utilization of granite and marble, was desired. In fact this had been the status of brick for ages. We read in Roman history that it was said of Augustus Caesar that "He found Rome brick and left it marble," the two materials representing in the historian's mind the lowest and highest durable building materials.

During the past 25 years there has been a considerable change in public sentiment, due to the activity of the manufacture of clay products and the manufacturer of the machinery from which they emerge. The plastic clay has been turned into units by which ornamental effects can be produced with a certain degree of facility. Not only the shape has been varied, but these products have been covered with colored slips and glazes, and even by merely burning certain clays, which have been judiciously mixed, shades in great variety are at the call of the architect. Consequently, our retrospections afford us this much satisfaction—that the clay product has emerged from its primitive restrictions and is recognized as being capable of being used with a certain elasticity of treatment which conforms to the architect's

ideals. We, therefore, cannot stand still. It is only the rustic that waits till the river flows by.

Introspection is a process of self-examination and it is well that we analyze for a moment our mental attitude in regard to things which are, in order that we may direct our efforts intelligently for our future advancement. It is not enough that we should rest content with our product as it is. Nor is it wise that we should neglect to ascertain carefully the quality of the product of our competitors and the methods by which such quality is obtained. No detail is too trifling to be studied in this connection. The French have a proverb, "A chaque saint, sa chandelle," which, translated, means, "To each saint, his candle." The writer of the proverb meant to convey that any source of possible favor should be conciliated. Whether that is true in religious matters or not, I leave to your individual judgment, but in business it is essential to success.

The phenomenal growth of the clayworking industry in Canada and the United States in recent years has been due to the increasing price of lumber, due to the depletion of forests and the consequent scarcity of trees of mature growth. The advance of printing, the extensive use of paper, have contributed largely to this scarcity, so that the trade journals may take to themselves some measure of the credit for advancing the use of clay products.

It is not to be expected, however, that the clay product will maintain its leadership in the field of construction forever undisputed. During the past decade there have entered the constructive lists two new factors in the industrial conflict—sand-lime and cement. The last of these has proved to be the greatest menace. Four or five years ago the brick manufacturers received a preliminary scare by the announcement that sand-lime brick were going to be manufactured in millions at \$3.00 per M. and that the market would be flooded with a product infinitely superior in strength and appearance at prices which would prohibit competition even by common clay brick. Experience has proved that this scare was totally unwarranted and the originators of the scare have passed off the scene of action. Their place has been taken by a band of men who have recognized the possibilities of molding sand and lime into brick form and by exercising judgment and skill have managed to produce an article which can compete only with a high-grade clay brick. As long as this is the case and as long as the initial investment in their manufacturing plants is as great, if not greater, than the investment required for the manufacturing of a clay product of the same quality and output, there remains before those with whom their products compete, merely a question of legitimate compensation, no more than has already been encountered from the competition of stone, granite and marble. On the other hand, a study of the methods of sand-lime brick manufacturers in grinding and preparing their material, mixing it, the character of the presses that they use and their methods of disposal of their products, may be of distinct advantage to clay manufacturers.

With the cement proposition, we have a more serious competitor at the present time. This is due largely to the universal distribution of the materials that they employ,

*Read at the meeting of the Ontario Clay Products Association which was recently held in Toronto, Ontario.

to the cheapness of installation and to the possibilities of the utilization of the commonest kind of labor in the manufacture of the products. This last factor has been considered one of strength. It is also the source of the greatest weakness. Many failures in cement and concrete construction are due to the hiring of hands instead of brains. The salvation of the manufacturer of clay products against the undermining of his business lies in the fact that with so many competitive materials large cities are becoming more stringent in their demands for the quality of the building materials to be admitted into their markets. The building specifications of New York and Philadelphia, made during the last year, easily rule out many products which had an open market in those cities previously. The whole standard of manufacture of products from all materials will have to be raised in the course of a few years, for the smaller cities will follow the example of the larger ones.

This brings us to a consideration of the Prospect. We have too much at stake to sit with our hands folded and merely believe that the antiquity of our product will win our battle with the architect. It is only the penniless traveler who can afford to sing in the presence of the highwayman. There remains for us, therefore, only to consider along what lines we shall carry on our industrial warfare, so as to maintain our present position of recognized worth, to enlarge the scope of the application of our products and to successfully cope with the invasion of our industrial field by other materials. Again I say, it is necessary to study carefully the claims of our competitors for their products and to so adapt our own materials as to meet them on every ground of vantage, retaining all the excellence of the past and continually adding points of superiority. At a recent convention in Chicago, held by the sand-lime brick manufacturers, the president, making his address, said that it was possible that in the future other materials might be added to sand and lime in order to produce the highest results. This may be true of clay products. We have not reached the limit of our industrial expansion. If we have, it might be wise to quit right now. But we have not. Our ceramists are at work on problems involving every detail of the manufacture of clay products. Their efforts have been directed largely, of course, in past years, to the solution of the more complex problems involved in the manufacture of higher grade claywares. This will not be always so. It is only during the last few years that the average brickmaker has conceded the possible advantage of calling into service the skill of the brickworks engineer. In the future the brick maker will study every possible point of the improvements of his product. He will give attention to the demands of the architect and will endeavor to meet them by adapting his clay and the products made from it to his requirements. It is simply a question of evolution and if we are wide-awake we will study the situation closely and arm ourselves at every possible point. We will consider our present manufacturing conditions and determine in our own minds the exact time when an increase of output will justify us in abandoning them for fresh ones. The methods to be employed for a 10,000 daily brick output would be absurd for the plant which manufactures 100,000 brick daily. Our chief trouble has been that our improvements have nearly always been made under pressure and rarely by choice of foresight. This paper is a rambling one and in harmony with the individual that wrote it, but it is presented without any further apology than that it contains a few grains of optimism.

STONEWARE COOKING UTENSILS.

For centuries utensils made of various metals have competed with one another for supremacy; iron, tin, steel, copper, brass, nickel, silver, aluminum and agate have all in turn come into prominence; all have their merits, and they are not few. Yet, with all these vessels, stoneware, or pottery, most ancient of all, has not been wholly driven out of existence. On the contrary, the thick utensils of clay or stoneware are daily coming into more prominence, and deservedly so.

There are reasons for this. Good stoneware takes no odor, rust, stain or tarnish. Because of its very thickness it is least liable of all to burn food in cooking or to affect its contents in any way. It is usually most reasonable in price—low when its durability and being properly handled is considered. It is made in many artistic forms and colorings, and can be sent direct from the fire to the table, where it not only does not detract from but actually adds to the general good effect of the table furnishings.

For cooking at a very high temperature—as for broiling or frying—it is not, of course, available, but for baking, braising, pot roasting and stewing it really has no equal, giving to its contents a steady, even heat, which allows the home cook to turn her attention to other duties; hence, it has double economic value.

The two primitive forms of our grandmothers consisted of pipkins—or deep stewing vessels—and shallower baking dishes. These are now elaborated to half a dozen forms, many of them with simple yet decorative covers. If the housekeeper who does not possess any earthen or stoneware utensils will add two or three to her stock she will find that they repay their first cost many times over. They may be used for pot roasts, beef a la mode, potted squabs, stewed kidneys, fricasseed chicken, smothered beef and many other vegetable and cereal dishes. Once prepared and the cooking started, they may be left to work out their own salvation, and yet be sure of a good result. The following recipe is a typical one, and capable of many variations:

Clean and disjoint a fowl in the manner usual for fricassee. Sprinkle each piece with salt and pepper and dredge with a little flour. Rub the inside of the deep roaster with a little butter or melted suet and pack in it the prepared pieces of meat. In a saucepan make a thin sauce with one tablespoonful of butter, one heaping tablespoonful of flour and a pint of boiling water. Season slightly with salt and pepper or other desired seasonings, and pour over the fowl in the dish. Have the oven hot at first. Adjust the cover and place the dish in the oven. After about twenty minutes the heat may be reduced and in from two to three hours the fricassee may be taken out in perfect condition, no further attention being required. Pot roasts will have all of the richness of a roast without the dryness which so frequently is deplored. Dumplings may be made and laid on the top, where they will steam themselves tender and light in twenty-five minutes.

Japanese pottery utensils come in many extremely decorative forms, and at low prices. Italian and Hungarian wares are equally desirable. The American stoneware is mainly in drabs, browns and old blues, and somewhat more severe in character, but is very durable.

**PLYMOUTH CLAY PRODUCTS COMPANY,
FORT DODGE, IOWA**

The above name applies to a company organized in the early part of 1907 for the manufacture of sewer pipe, incorporated under the laws of Iowa, with a capital of a quarter of a million.

Place of business will be Fort Dodge, Iowa. The executive officers, well and favorably known business men of Fort Dodge, are L. E. Armstrong, President and Manager; E. L. Marsh, Vice President, and J. T. Cheney, Secretary and Treasurer.

The factory is located joining the city on the southeast, on a nice 70-acre prairie tract adjoining Olson Park. Ample room for all additional buildings that may be required in the future for the proper operation and care of the plant's products, as well as plenty of outside room for storage of pipe.

The main building will be 456 feet long by 80 feet in width, constructed of brick, and three stories in height and basement, and will be utilized for drying purposes, with a floor space of about 110,000 sq. ft. In addition to the main building and adjoining same will be other rooms as follows: One room 50x52, in which will be located four boilers for supplying steam necessary for the heating and operation of entire plant. An engine room which will contain an extra heavy duty 300 horse power Corliss engine for the operation of all machinery. The size of this room will be 20x50 ft. Another room 90x96 in which will be installed the dry and wet pans, two of the former and four of the latter being required. Also a clay storing house 40x250 ft. for the reception and storage of clay as it comes direct from the mine or shaft. This clay is mined 100 ft. below the surface, hoisted by regular mine shaft, which is at this time in operation, clay being already taken out and stored. The clay vein from which the supply is to be had, is 20 ft. in thickness and is inexhaustible. From chemical analysis made of this clay, probably a total of fifty, and the various tests made of same in burning in some of the largest and best sewer pipe plants, and also tests made at Fort Dodge by the Stoneware Plant and the Ft. Dodge Brick & Tile Company, show it to be of superior quality. It takes a most beautiful glaze and burns to a good vitrified body. This clay being mined, gives this company many advantages over other plants where clay is taken from or near the surface; in such cases there is at all times more or less of the earth's surface mixed with the clay, and wet and bad weather, etc., tends to delay the regular production of it, as well as freezing weather in winter. These obstacles are all overcome when the clay supply is mined, and assures a regular and steady run twelve months a year.

A very practical arrangement is being installed to handle the clay from top of shaft to clay storage house. A cable railway on an incline, clay being dumped into cars of one or two ton capacity at shaft, and manipulated in such a manner that a train of these loaded cars moving to the storage house will pull a train of similar number of empties from the storage to the shaft, which will be about 700 feet distant from the storage house.

In connection with this plant it is arranged for 18 kilns

28 ft. in diameter, for burning the various productions. These kilns will be constructed on the very latest and most practical plans, and will require about 1,000,000 fire brick to be used in their construction. It is estimated reliably that the product from one of these kilns will be sufficient to fill five cars and requires nine days from the time the press product is inserted until it is ready for shipment. This will give the factory when completed, a capacity of 10 cars per day, or in the neighborhood of 3,000 carloads per annum.

Another very advantageous feature which this company will enjoy is their exceptionally good railroad facilities. Three lines of road will reach the plant. The Illinois Central with a loading track and also a coal track; the Chicago Great Western and the Fort Dodge, Des Moines and Southern, with tracks similar to those of the Illinois Central. This practically assures the company of being able to get fuel for the plant's consumption, switching necessary, and a supply of empties for outgoing products at all times.

The principal products from this factory will be of the following: Sewer pipe, sizes 3", 4", 6", 8" and 10", in single strength and 12", 15", 18", 20" and 24" in both single and double strength. The various traps for sewer pipe connections, such as handhole, vent, P. & S. traps, also elbows and curves of various sizes. Junctions of all kinds, increasers, reducers, strainers, stoppers, Y's, T's, etc.; wall coping in sizes to fit any wall; electric conduits and drain tile of sizes up to 24".

Conservative estimates have placed the number of car loads of material that will be used in the building of the plant at between 600 and 700 carloads. About 100 cars have already been received and placed in the foundations, which by the way are of concrete, and put in under the supervision of the most competent men, and from all appearances will stand until Gabriel blows his horn. The major portion of the material required will consist of 2,000,000 common brick, or about 150 carloads, about 1,000,000 fire brick, 50 to 75 loads of sand, 40 to 50 carloads of crushed stone, a number of cars of lumber, shingles, cement, and various other materials, such as iron pipe, machinery, bands, etc.

When plant is ready for operation it will require the help of a number of men, probably in the neighborhood of 200.

The plant is well under way and if no delay is experienced in getting the material, machinery and labor, the plant will be ready to start in August.

**PLANT OF THE DIAMOND FIRE BRICK CO.
SOLD**

The plant and equipment of the Diamond Fire Brick Co., in Canon City, Colo., one of the most extensive in southern Colorado, has been sold to S. C. Cowgill of Montezuma, Ind., who will organize a new company for conducting its business. Mr. Cowgill and associates have plans for extensive improvements, and will greatly increase the capacity of the plant. The new company will have practically unlimited backing and will develop the fire-brick industry in Colorado and adjoining states to an extent not previously attempted. One of the products of the company will be silica brick, used for lining the furnaces of foundries, smelters, etc.

ASSOCIATION ORGANIZED TO PROMOTE THE USE OF BURNT CLAY PRODUCTS.

The Brick Construction Association of Los Angeles, California, an organization formed for the purpose of promoting the use of burnt clay products in Los Angeles and vicinity, after six months of effort has just received from the press an elaborate publication, entitled "Burnt Clay Products in Fire and Earthquake," ninety-six pages and cover, containing eighty-three half tones—5x7—showing the effect of fire and earthquake on concrete, reinforced and plain, the defects of concrete in general (hollow cement block collapses, frame building collapses) and collapse and official report of the Hotel Bixby disaster, Long Beach, California. Also excellent results of brick and clay products in San Francisco in fire and earthquake, with concise descriptions. Also short technical extracts by the leading architects and engineers.

The printing of this publication was prompted by the claims that were made by the cement interests against brick and tile. We have no hesitancy in saying that there has never been anything published that will equal this book, having had a transcendent field to draw from and having *spared no expense or time* in its *make-up*.

The book is 9x12, paper, printing and half tone work *the best*. Cover in four colors, allegorical representation of burnt clay products, tried by the elements and found not wanting.

The book contains nothing cheap or objectionable and is intended for distribution among architects, engineers, builders and owners, city officials, bank directors and loan associations, and is the only bona-fide cure for the reinforced concrete mania and warranted to restore to their normal mind anyone affected with the new craze—"Cementi Dementi."

We will use three thousand copies for local distribution and intend to reach every architect, engineer, bank director, city official and owner who contemplates building, and we would suggest that to further the brick interests, you take it upon yourself, individually, to send out a few copies to combat the publications issued by the cement interests.

If you are in touch with any association, it would be well to take the matter up with it to have the book sent out in quantities.

While our book was yet in the press, we communicated with the National Brick Manufacturers' Association, which was then in session, stating that we would make a price of 75 cents per single copy, but when completed, we find that with extras (and as the postage alone is 10 cents per copy), it will be necessary for us to charge as follows:

Single copies	\$ 1.00
Quantities of one hundred (100)	75.00
In five hundred (500) lots	250.00

With wrappers ready for mailing, charges pre-paid to point of delivery.

You can remit either by money order or draft.

We will again state, that the book, as an advocate of brick or tile, has never been equalled; and on account of its excellence and costly make-up, forces recognition. Though it contains 96 pages, when once the cover is glanced at by anyone interested in construction, we assure you they never lay the book down until they have thoroughly digested its contents—having done so, means another friend for burnt clay construction.

BRICK CONSTRUCTION ASSOCIATION.

MICHIGAN CEMENT MILLS ARE NOW MAKING MONEY.

"The cement-making industry of Michigan as a money-making proposition is gradually getting into excellent shape," said J. Fletcher Williams, of Detroit, vice-president of the Egyptian Portland Cement Co., Fenton, Mich.

"Whether the wet marl process or the lime rock process is used, if there is sufficient raw material, the plant has a good chance of success by proper management. This is shown by one of the wet process mills which paid 26 per cent dividend in 1906, and another, recently ranked as a "cripple," which netted \$40,000 in six months.

"I saw an article in a Detroit paper stating that marl cement mills were on the road to ruin. This article must have been inspired by one who is interested in rock cement, or who is lacking in information. While it is true that many wet process companies have met with disaster and been forced to reorganize, there is reason for this.

"The manufacture of Portland cement from marl in Michigan dates back but a few years, and little knowledge was available by the first mills on the subject of the wet process, so that each concern had to work out its own plans for manufacture, governed by local conditions. That is truly called the experimental period, and perfection has not been attained in either the wet or dry process even yet. This can be said of almost any industrial process.

"The difference of cost of manufacture between the dry and the wet method is still unsettled. Leading experts in the two methods are unable to agree, because success or failure in either depends so much on conditions at the site of manufacture.

The machinery for a dry process mill is more than 20 per cent greater than for wet. The lime rock has to be quarried, conveyed to the mill and ground to a fine powder. Clay and sometimes free lime have to be added, since the rock does not always contain the required amount of carbonate of lime. These ingredients may have to be transported by rail to the mill.

This is not necessary in the wet process, since nature has provided the marl as used by a number of cement companies, in such fineness as to pass through a 100-mesh sieve, and with less than 1 per cent variation in the amount of carbonate of lime. The marl is pumped into the mill from the lake bed at very low expense.

"The amount of fuel required to dry out the marl is pointed to as an obstacle; but it may be observed that fuel also is required for power to grind up the rock in the other process. The temperature of the gases thrown off by the boiler of a rock crushing plant is sufficient to dry marl.

"After the two products are secured in dry powder form, the processes are identical and the expense of manufacture the same.

"Failures in the marl process have been through lack of experience and neglect to make proper soundings of the deposits before installing expensive plants to depend on them.

A LARGE ORDER FOR FIRE BRICK.

Two hundred new coke ovens of the modified Belgian type will be erected at the Herbert works. New Salem, Pa., of the Connellsville Central Coke Co., the output of which is controlled by J. H. Hillman & Son of Pittsburg. The work has been commenced and a contract for 1,600,000 brick has been closed with the Harbison-Walker Refractories company.

The ovens will be 35 feet long and five feet wide, which is larger than the experimental ovens erected last fall at the Mount Braddock plant of the Rainey Coal and Coke Co.

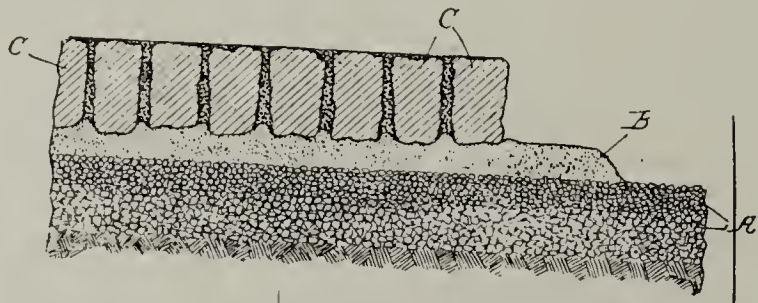
CLAY RECORD.

NEW INVENTIONS THAT ARE OF INTEREST TO THE CLAY MANUFACTURER.

These new inventions are those that are especially of interest to anyone engaged in the line of building materials and their manufacture, or machinery to make them.

847,471. Pavement. Freeman F. Gross, Chicago, Ill. Filed Oct. 12, 1904. Serial No. 228,093.

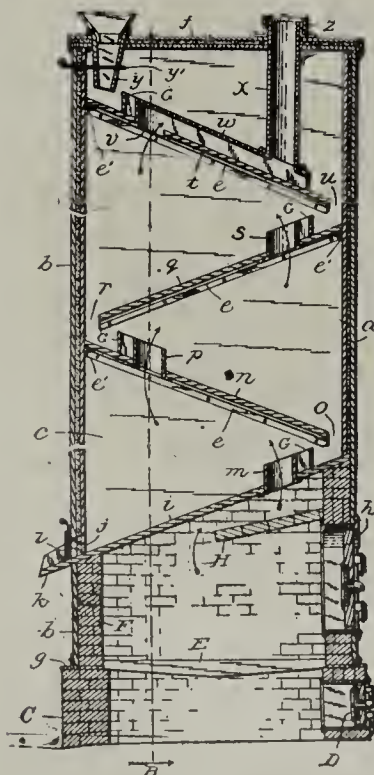
Claim—The process of making a street-pavement which consists of laying a foundation which shall be substantially impermeable to liquid, covering such foundation with a cushion of dry relatively finely divided material containing cement, placing blocks of stone or the like generally rectangular and irregular in shape, upon such cushion in its



dry state, and bringing their upper surfaces to a level by building up or hollowing such cushion beneath said blocks, then flooding such pavement with water after the blocks have been laid so that the water passes down through the interstices beneath the blocks and makes plastic the whole of such cementitious cushion and then allowing the same to harden.

847,513. Sand and Mineral Drier. Marguerite Schaeffer, Indianapolis, Ind. Filed Nov. 30, 1906. Serial No. 345,611.

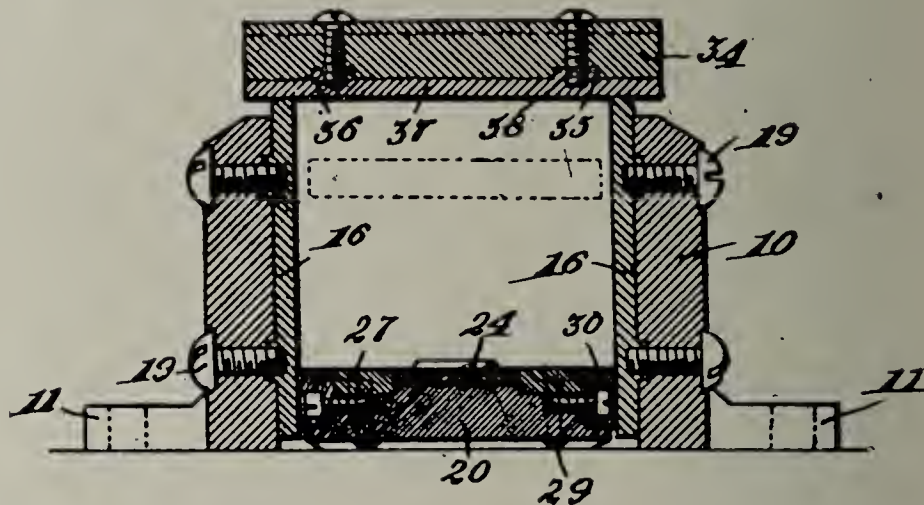
Claim—A drier comprising a structure having a front wall, a rear wall and two side walls, the lower part of the structure forming a furnace-chamber, a slanting floor in the



structure joining all of the walls thereof forming a roof for the furnace-chamber and provided with a flue-pipe remote from the walls, the wall at the lower portion of the floor having an outlet-opening therein, and a plurality of communicating drying-chambers arranged above the floor, each chamber above the lower one having an inclined floor joined at its higher end and sides to several of the walls and provided with a flue-pipe remote from the walls, the furnace-roof forming the floor of the lowermost drying-chamber.

849,214. Brick-Press Box. Lawrence W. Daughenbaugh and Clarence A. Markle, Clearfield, Pa. Filed May 22, 1906. Serial No. 318,222.

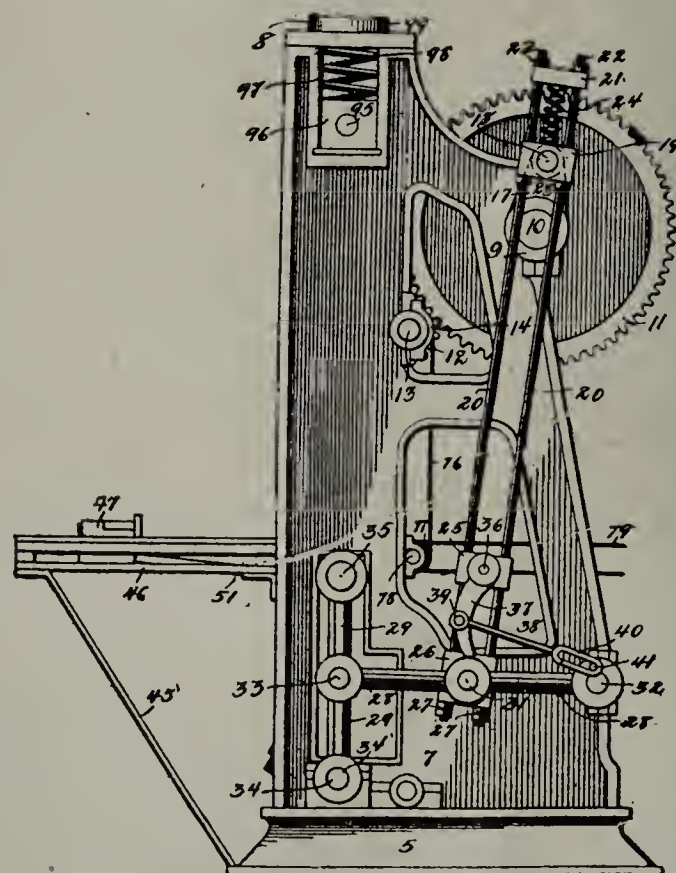
Claim—In a brick-press, a press-box, detachable liners therefor, and means for securing the liners in place, the press box and liners having closely-interfitting connections to prevent shearing strain on the securing means.



In a brick-press, a pad comprising a plate having a recessed upper face and provided with a continuous marginal recess, a detachable name-plate carried by the pad, facing-strips arranged in the recessed upper face of the pad, and liner-strips secured within the marginal recesses of said pad.

849,258. Machine for Re-pressing Brick. Eugene Murray, Washington, D. C., and Asher O. Travis, Del Ray, Va., assignors to Edwin L. Cockrell, Washington, D. C. Filed Feb. 17, 1906. Serial No. 301,715.

Claim—A re-press-brick machine comprising a frame, upper and lower cross-heads reciprocally mounted in said frame, upper toggle-arms connected to the upper cross-head and to a spring-pressed bearing, a main shaft, means for actuating said upper toggle-arms from said main shaft, lower toggle-arms connected to the lower cross-head and to a fixed portion of the frame, secondary lower toggle-arms connected to the first-named lower toggle-arms and a fixed portion of the frame, and means for actuating said secondary toggle-arms from the main drive-shaft.

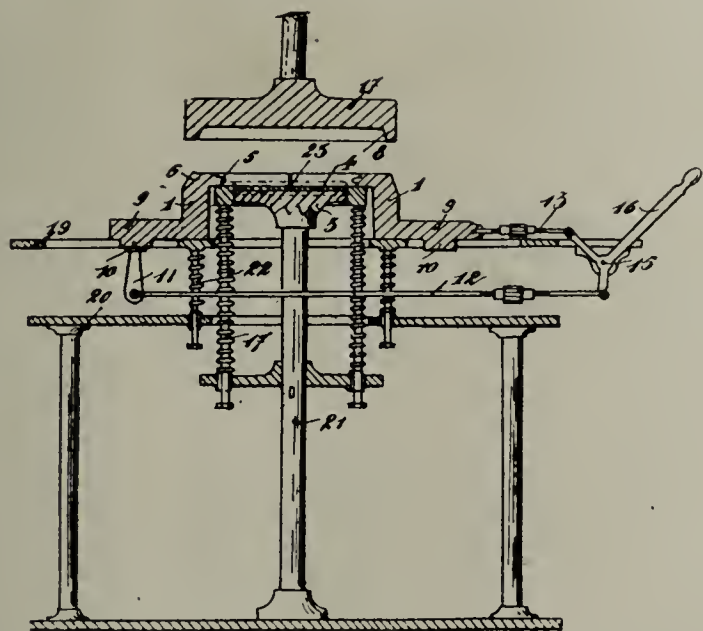


A re-press-brick machine comprising a frame, a main shaft journaled therein, an upper cross-head mounted for reciprocatory movement in said frame, operative connections between said upper cross-head and said main shaft, a

lower cross-head mounted for reciprocatory movement in said frame, actuating elements carried by said lower cross-head, connections between said shaft and said actuating elements, means for engaging said connections with said elements during a selected part of a revolution of said shaft and means for disengaging said connections from said shaft during the remainder of the revolution.

848,078. Apparatus for Forming Tiles Provided with Flanged Edges. André Weill, Brussels, Belgium. Filed Nov. 6, 1906. Serial No. 342,219.

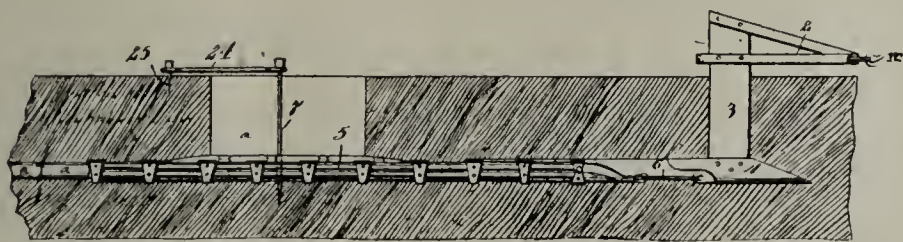
Claim—Apparatus for molding tiles, which comprises in combination a mold formed of movable and fixed parts, a pressing device operating on said mold from above, and means for converting the downward pressure of said device into upward and inward pressure of the parts of the mold.



In apparatus for molding tiles the combination with a mold comprising a fixed base part and a movable base part, movable side parts and inclined surfaces on said side parts of a pressing device operating from above and an inclined rim on said device corresponding to and adapted to engage with the inclined surfaces on the side parts of the mold substantially as and for the purpose set forth.

848,841. Machine for Laying Underground Drain-Tiles. Marsena P. McCulloch, Red Oak, Iowa. Filed Aug. 2, 1906. Serial No. 328,938.

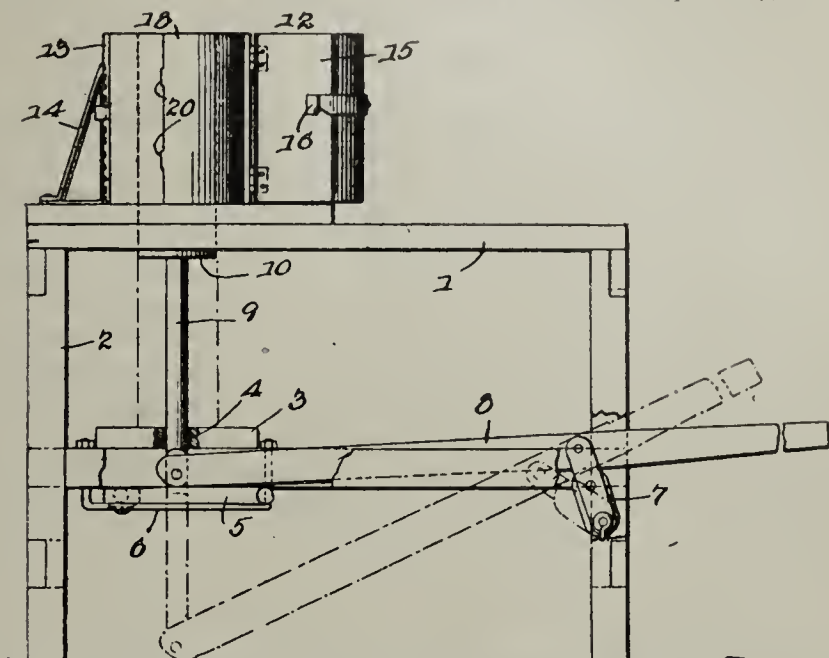
Claim—A tile carrier and layer comprising longitudinal side sections, connected together at their front ends and otherwise separated from each other at their upper and lower sides to enable a stop-stake to be driven between them and into the ground below, for the purpose set forth.



A hollow tile carrier and layer of the class described having an elastic bottom, elastic sides and elastic top portions, said top portions adapted to be opened at points between the ends of the tile carrier and layer, in combination with a relatively fixed stop device to cause such tiles as are in the carrier and layer in rear of such stop device to be forced out of said carrier and layer by the motion of the latter, said stop device coacting with the top portions of said tile carrier and layer, while the latter is in motion, to open said top portions in advance of such stop device to enable tiles to be placed in such tile carrier and layer in front of such stop device.

848,664. Tile-Molding Machine. David Leonard, St. Louis, Mich. Filed May 18, 1906. Serial No. 317,437.

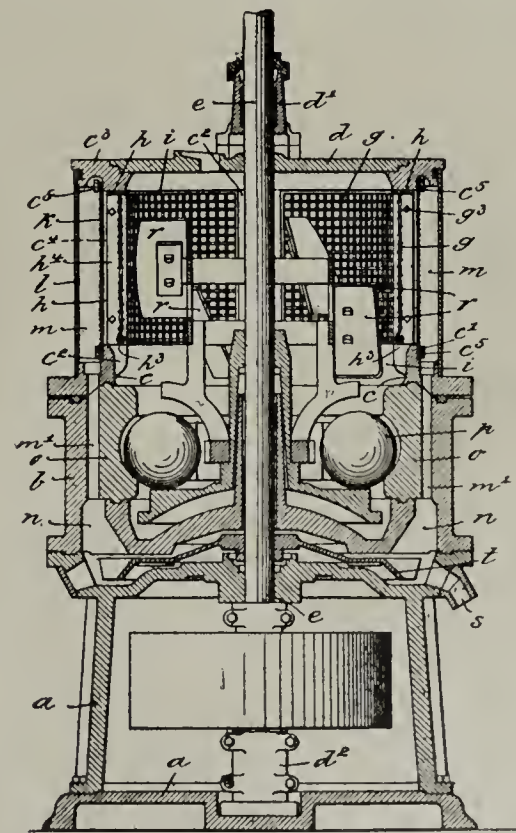
Claim—A molding-machine comprising a table, a core mounted to reciprocate therein, a jacket mounted upon the table and adapted to surround the core, said jacket consisting of movably-connected sections, one of said sections being immovably mounted upon the table, and a casing removably mounted within the jacket and comprising a sin-



gle sheet adapted to surround material within the jacket, the ends of said casing being adapted to overlap, and means upon said ends for holding them together when overlapping.

849,779, 849,780, 849,781 and 849,782. Pulverizing or Grinding Mill. James W. Fuller, Jr., Catasauqua, Pa. Filed Mar. 13, 1906. Serial No. 305,743.

Claim—The combination, in a pulverizing or grinding mill, of a grinding-ring, balls operatively engaging and maintained in contact with said ring, a housing provided with openings, a fine screen and sectional coarse screens,



said fine screen surrounding said housing, and said sectional coarse screens fitting the openings of said housing and two series of rotatable wings or blades supported above said grinding means at different angles to each other and so arranged as to elevate materials of different degrees of fineness from said grinding means and by the upper series of said blades or wings to discharge by the force of said wings or blades through said screens, substantially as and for the purposes described.

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Vol. XXX.

MAY 30, 1907.

No. 10

"I like to read American advertisements. They are in themselves literature, and I can gauge the prosperity of the country by their very appearance."—William E. Gladstone.

When times are dull and people are not advertising is the very time that advertising should be the heaviest. Ninety-nine out of every hundred merchants advertise most when there is least need of it, instead of looking upon advertising as the panacea for their business ills.—John Wanamaker.

When ambition crawls in at the window contentment flies out at the door.

Every man must pay for what he gets either in money, its equivalent or self-respect.

Did you subscribe for the Clay Record? We asked you to become a subscriber. Why not now?

Every time a man files an application for a patent he imagines he going to revolutionize things.

It is seldom difficult for a man to get rich after he has acquired the art of hypnotizing his conscience.

A broad-minded man never loses any sleep because another man's opinions fail to agree with his own.

Some people boast of taking time by the forelock, but most of us are lucky if we can clinch it by the back hair.

Beware of the man who is afflicted with excessive politeness. He probably has designs on a slice of your bank balance.

The Clay Record is the only clay journal in this country that is printed twice a month. Its cost is only one dollar for twenty-four numbers or one year. Order it now.

BUILDING OPERATIONS FOR MAY.

Building operations from some fifty leading cities throughout the country indicate a far greater activity than could be expected under the unfavorable circumstances of a backward season and unpropitious agricultural reports, which play an important part when actual money is to be liberated for building construction. Compared with May, 1906, the past month shows a loss of only 1 per cent in the aggregate building construction in some fifty cities. The losses and gains are in cities widely scattered throughout the country plainly indicating local causes. The principal gains are as follows: Detroit, 40 per cent; Duluth, 11; Evansville, 71; Hartford, 17; Milwaukee, 202; Minneapolis, 91; Memphis, 15; Mobile, 42; New Orleans, 69; Philadelphia, 16; Paterson, 35; Portland, 5; Seattle, 28; Spokane, 111; South Bend, 198; Syracuse, 82; Toledo, 15; Tacoma, 16. Losses are scored in a number of thrifty cities which can well afford a decline in building operations. Atlanta lost 21 per cent; Birmingham, 17; Bridgeport, 40; Buffalo, 42; Dallas, 11; Denver, 27; Grand Rapids, 18; Louisville, 18; Omaha, 37; Pittsburg, 21; Reading, 19; Scranton, 37; Salt Lake City, 67; Washington, 42; Worcester, 60; Wilkes-Barre, 59, and in spite of this setback as compared with May, 1906, each of those cities has in progress a fairly good number of building projects.

GOOD ROADS MADE FROM GUMBO IN THE STATE OF MISSISSIPPI.

Congress some time ago established an office of public roads, which is instructed to conduct experiments and devise methods for improving the roads of the United States. The office has done a great deal to arouse interest throughout the country in the necessity of good roads and has originated several means of making good roads economically. The latest discovery is that of burning clay roads in Mississippi.

In large areas in the south, particularly in the valleys of the Mississippi and its tributaries, sedimentary clays are found very generally. In these areas there is little or no sand and the clays are of a particular plastic and sticky variety. These sticky clays are locally known as "gumbo" and "buckshot." In such localities traffic is absolutely impossible during the wet season, as the wheels of heavy vehicles will sink to the hub.

The clay is black, owing to the high percentage of organic of vegetable matter it contains. It is particularly sticky in its nature and is almost wholly free from sand and grit. After it has been burned, however, the plasticity is destroyed and a light clinker formed, which, though not particularly hard, when pulverized forms a smooth surface and seems to wear well.

YOUNG HAVILAND AND WIFE, FORGIVEN BY PARENTS, WILL STUDY TOGETHER.

Guy D. Haviland, son of the millionaire china manufacturer, New York, has been forgiven by his parents for contracting a secret marriage and will inherit a fortune of \$20,000,000, as originally intended. The youth is still under 21 and it is understood he has agreed to complete his college course, taking his bride of 20 to live with him in luxurious style, while they both continue their studies.

OBITUARY

Aaron Woodhull, secretary of the Ross-Keller Brick Machine Co., Fullerton Bldg., St. Louis, Mo., died at his home, 1147 No. Euclid Ave., after a week's illness of a complication of diseases. He was 69 years of age and built the first creamery in Missouri. A widow and three children survive.

J. H. Arbogast, the senior member of the firm Arbogast & Son, at Lumberton, Miss., was instantly killed by the shovel of a steam shovel dropping upon him at the brick works. He formerly lived and operated the brick and tile works at Farmer City, Ills. A widow and four sons survive.

Scott E. Andrews, foreman of the Lowell (Ills.) Pottery Co., was killed at the plant by his clothing being caught in a setscrew of a shaft and he was wound around the shaft and died within an hour. He was 54 years of age and leaves a widow.

ATTEMPT IS MADE TO REVISE RATES

Des Moines, Iowa, brick manufacturers have applied to the Iowa railway commission for a revision of the freight rate on brick under the Iowa distance tariff. In their petition to the commission they point out that the Iowa distance tariff rates on brick is much greater than the interstate freight rate on the same commodity for similar distances. The petition has been docketed, but the date for a hearing has not been set.

The application is based on section 2140 of the Iowa statutes, which provides that freight rates in adjacent states shall be prima facie evidence of the reasonableness of the same rate within Iowa.

In the petition a number of comparisons of the Iowa tariff and the interstate tariff are made, showing the Iowa rate to be greatly in excess of the latter.

Under the Iowa distance tariff the rate on brick (class E) for 411 miles is 17 cents, and for 280 miles 10 4-10 cents.

The interstate rate on brick from East St. Louis to Omaha (411 miles), is 7½ cents, until recently 5 cents per hundred.

The rate on brick from Chicago to East St. Louis (280 miles), is 5 cents per hundred. This is less than half the rate under the Iowa distance tariff.

A peculiarity of the comparison is that the rate on brick from Galesburg, Ill., to Omaha was 5 cents per hundred for a long time. These brick had to be hauled across part of Illinois and clear across Iowa, yet the rate was much less than if the shipment had originated on the same road west of the Mississippi river and the haul terminated east of Council Bluffs.

A peculiarity of the way railways figure mileage in making freight tariffs has just been called to attention here. On shipments from Des Moines to Omaha, the distance is given as 145 miles; on shipments from Omaha to Des Moines, the distance is given as 150 miles. On the shipments originating in Des Moines, a bridge toll over the Missouri river is charged but on the shipments originating

ACCIDENTS, DAMAGES AND LOSSES

The plant of the Schuylkill Valley Clay Mfg. Co., Shoemakersville, Pa., will be sold by the sheriff at the Reading (Pa.) Exchange, June 8th.

John Adams, a negro, died as the results of injury sustained in a boiler explosion that occurred at the plant of the Chattahoochee Brick Co., Atlanta, Ga.

R. M. Wilson was hurt at the St. Joseph (Mo.) Pressed Brick Co.'s Works so that his recovery is doubtful. He was in a trench and the bank caved in on him.

Andrew Miller fractured his skull at the brick plant of the Forest City Brick & Clay Co., West 53rd St., Cleveland, Ohio, by falling upon the incline from the engine platform.

Alfred Lutz, aged 35 years, was killed at the plant of the Eastern Hydraulic Press Brick Co. at Winslow, N. J., by the collapsing of a scaffold, which fell on him while walking beneath it.

A bill for the appointment of a receiver for the People's Brick Corporation of Lansdowne, Baltimore Co., Md., has been filed by George Foos and others, who have labor claims against the company.

Forest Chapman was seriously and possibly fatally injured at the plant of the Owensboro (Ky.) Brick & Sewerpipe Co. by being caught in the clay elevator while trying to stamp out clay that had clogged in the elevator.

One hundred pounds of dynamite exploded under the blacksmith shop of the Reese-Hammond Fire Brick Co., Bolivar, Pa., and blew to atoms that building, also the restaurant and storage house. Glass was broken all over the town.

P. L. SIMPSON STILL IN THE RING

Editor Clay Record:

It is well known that our Mr. P. L. Simpson is one of the oldest, if not the very oldest, manufacturer of dry-press brick machinery in the United States and is looked upon not only as a pioneer in the business but also having a wider experience than anyone else in this line. Mr. Simpson is the manager of this concern and it appears that some of our competitors have quite an original way of keeping customers away from us by telling them that "Mr. Simpson has left America and is now permanently located in Europe on account of his health." It is the purpose of this letter to state emphatically that this story is a falsehood, as Mr. Simpson is permanently settled right here in Chicago and connected with us as our manager and furthermore, we are glad to state that he is in excellent health and is not at present in any way requiring a residence abroad on account of any physical ailments. We are pleased to invite any customers desirous of purchasing any of our specialties, particularly dry-press brick machinery, to call at our office where our Mr. Simpson will be glad to meet them and freely give of his advice and experience. We would especially urge customers to write or visit us in order to have such stories confirmed or denied before believing them, knowing that when one is discovered uttering one falsehood it is a sign that he cannot be depended upon in any other statement he might make; "*falsus in uno, falsus in omnibus.*"

Yours very truly,

NATIONAL BRICK MACHINERY CO.

Chicago, May 30, 1907.

FIRE! FIRE! FIRE!

The Palouse Pottery Mfg. Co.'s big plant at Palouse, Wash., was damaged by fire to the extent of \$9,000. Insurance about \$5,000. The plant will be rebuilt at once.

The plant of the Alonzo Curtis Brick Co., Grant Park, Ill., was visited by a \$1,500 fire; loss covered by insurance. The work of the factory was not hindered by the fire.

Fire destroyed Husband Flint Mills at Deer Creek, Harford county, Md., operated by American Pottery Supply Co., of Baltimore.

DES MOINES BRICK INDUSTRY BOOMING

The Shackelford Brick company is just completing improvements that will triple the capacity of its plant in North Des Moines. The company's daily output heretofore has been about 35,500 brick, but will henceforth be about 125,000.

A new brick press, one of the largest made, is being installed. It weighs about twenty-five tons. The crusher, grinder, pugger and press are united in the one machine.

The big demand for building brick led to the improvements.

S. C. Lee, president of the Iowa Brick company, has reopened the plant near twentieth and St. Joseph streets. The plant has been idle for two years prior to this season.

During the lull in local building operations a few years ago, it was decided that the demand and prices were not sufficient to make the plant a good investment. It is handicapped by not having railroad facilities, the entire output having to be hauled by wagon. The local demand this spring has been such that the entire output has been sold far ahead.

The plant has a capacity of about 75,000 brick per day in addition to the clay flower pot department.

STATE RAILROAD COMMISSION SAYS CLAY MANUFACTURERS OF WISCONSIN ARE HELD UP ON EXCESSIVE RATES

Manitowoc, Wis., May 26.—Clay manufacturers of the state have been granted a decision by the state railway commission compelling a 40 per cent reduction in freight rates on brick as result of a complaint was lodged by a committee of the Wisconsin Clay Workers' association, of which G. W. Kennedy of this city, was chairman. The protest alleged that Chicago manufacturers were given lower rates than Wisconsin brick men on shipments to points in the state and the clay workers rejected an offer of a compromise and appealed. The commission has granted the committee the full reduction.

STATE MEETING OF BRICK MEN

Waco, Tex., May 24.—The local brick men are preparing for the state meeting of the brick men which is to be held here June 5 and 6. The secretary is J. M. Harry of Dallas and it is expected that half a hundred of the brick manufacturers of the state will be here. The meeting will be held in the Business Men's Club rooms.

THE RELIANCE MACHINE AND TOOL WORKS

The Reliance Machine and Tool Works of St. Louis, Mo., is now very busy at their large plant getting out several complete brickmaking outfits, which they have recently disposed of. This firm which is the manufacturers of the "Reliance" Dry Press Brick Machine states that prospects are exceedingly bright.

Besides manufacturing brickmaking machinery they manufacture a large line of steam pumps, the "Hooker" being the principal one of them. They also make large quantities of special machinery.

BARBER COMPANY SELLS 350 CARS OF BRICK

One of the largest contracts for paving brick ever awarded to a Des Moines, Iowa, firm has been given to the Barber Asphalt Company, which will furnish material for 50,000 yards of paving at Fremont, Neb. The company has a new sized paving block and 2,500,000 of these blocks will be used in paving the streets of Fremont. The contract calls for part Flint and Capital City brick and these will be purchased from the other companies.

It will take 350 cars to contain the shipment and the Barber plant here will be taxed to its utmost capacity during the summer to supply this large job. The material will be shipped in ten trains of thirty-five cars each and if the cars were put in one train it would be nearly four miles in length.

WOMAN WHO SELLS BRICK AND COMPOSES MUSIC

Of all the unique pursuits followed by women, none perhaps is more out of line with feminine instincts than selling brick and building material. Yet Mrs. Nellie Snyder-Smith of Dallas, Tex., has built up a business which now runs over \$200,000 a year.

And she started eight years ago with four bricks.

The four bricks were samples which her husband had used in the business his widow took up upon his death. Last year she sold 9,000,000 common brick and 2,000,000 face brick, not to mention other building material. She not only sells more brick than a whole lot of men, but has been told that she disposes of more than all the other women in the world put together.

Mrs. Nellie Snyder-Smith is a contributor of note to magazines, and about the last topic she would write of is her business. Moreover, she is a composer of music. Her holiday retreat is her fine, big stock farm, forty miles from Dallas, one of the best in north Texas.

CONTRACTOR WANTS LEGISLATURE TO PASS ENABLING ACT

Frank Reich petitioned the Detroit, Mich., council to get the legislature to pass an enabling act under which the council may pay him for the work he has done on the municipal brick plant before he was enjoined and the action of the council in providing for the plant held by the circuit court to be invalid. Reich's petition was considered by the committee on charter and city legislation, but the committee took no action. The contract price for the plant was \$41,550 and for the work he has done Reich wants the city to pay him \$4,445.50.

HARBINSON-WALKER COMPANY MANUFACTURING MANY OVEN BRICK

The Harbinson-Walker Refractories Company of Pittsburgh has secured, in the past few months, contracts involving millions of silica, clay and quartzite brick for coke oven construction in the Connellsville and adjacent regions.

Chief in interest among them is one for the 200 new ovens of the Connellsville-Central Coke Company now building at Herbert works, New Salem. These ovens will be of the modified Belgian type, 32 feet long and five feet wide. Lime bond silica and clay brick to the number of 1,600,000 will be used, and a great future is expected for this plant. The brick company will shortly complete shipments to Grindstone No. 3 works of the Pittsburgh Coal Company, consisting of 252 ovens, and will then begin on the new 350 oven plant of this company at Grindstone No. 4, at or nearby Rows Run.

Several million will soon go to the new 278 oven plant at Ernest, Indiana county, Pa., for the Jefferson & Clearfield Coal & Iron Company. The Ellsworth Coal Company of the Lackawana Steel Corporation is using Harbinson-Walker brick in the 250 ovens and flues it is building at Ellsworth, Pa. The Republic Iron & Steel Company is erecting 95 additional ovens at Republic, Pa., of this material; the Champion-Connellsville Coke Company is building 40 ovens at Brownsville, Pa., and the Georges Creek Coal & Iron Company of Underwood, W. Va., 25 ovens. The La Belle Iron works will use these brick in the block of modified beehive ovens it is building at Steubenville.

MONTGOMERY BRICK COMPANIES UNITE

The Montgomery (Ala.) Brick and Tile Company, which was organized a few days ago, started out in business. It has purchased the McIntyre and Excelsior brick yards, including seventy-nine acres of ground, and assumed charge of operations.

The deal for the purchase of the two yards was consummated the last of the week, but the former owners conducted their plants up to Saturday. The exact consideration for the deal was not made public, but it is said to have been in the neighborhood of \$60,000 for the two yards.

The company has been organized with a capital stock of \$100,000, of which \$60,000 has been paid in. Its officers are: H. B. Battle, president and general manager; I. S. Stratton, vice-president; George H. Walker, second vice-president; E. W. Stay, secretary and treasurer.

FORT DODGE WILL MAKE RECORD COMING YEAR

More than a million and a half of dollars will be spent in Fort Dodge, Iowa, during the year 1907 in public and private improvement. Improvements aggregating nearly one million of dollars are now under way. Labor is at a premium and orders for material can hardly be filled. The greatest construction work actually under way is at the enormous sewer pipe and drain tile plant of the Plymouth Clay Products Co., whose four buildings, to be erected at an estimated cost of \$250,000, were started March 1. Next in line come the new plants of the Sackett plaster board factory, to cost \$50,000; the American Independent Gypsum Co., to cost \$60,000, and the Iowa Hard Wall Plaster Co., to cost \$45,000. The three latter are nearly completed.

POTTERY NEWS ITEMS

W. J. Pech & Son, Macomb, Ills., have leased land at Augusta, Ills., upon which to mine their clay.

The Climax Pottery Co. of Cookston, Ohio, has been incorporated with \$100,000 capital stock by A. E. Smith and others.

The Van Briggles Pottery Co., Colorado Springs, Colo., will erect a large factory building on Glenn Ave. The building will cover 12,000 square feet of ground, and will cost \$25,000.

The sale of the pottery of the Ford City Pottery Co., Kittanning, Pa., was made to the Colonial Trust Co., of Pittsburgh, Pa., the largest individual creditor. The purchase price was \$51,000.

The Homer Laughlin China Co., Newell, W. Va., is making rapid strides with its new plant. The last of the 24 kilns are completed and in operation, making this the largest pottery in the world.

The annual shut down of most of the potteries of the Ohio river district will be during the month of July. As a rule the shut down will be short this year. Repairs will be made at all the plants during the time.

The Standard Pottery Co. of Salineville, Ohio, has filed a deed of assignment transferring all its property to Attorney L. C. Moore for the benefit of creditors. The property will amount to \$5,000, which is held by him.

The Cheboygan (Mich.) Pottery Co., is offering \$30,000 of the stock of their company to the citizens of that town, the balance, \$20,000, to be taken by Dr. A. M. Gerew and others. W. P. Jarvis of East Liverpool, O., is interested.

The plant of the Faience Pottery Co., Zanesville, Ohio, has been transferred to the Fisher Veneer Tile Mfg. Co. The plant will be overhauled and used in the manufacture of veneered brick. Cincinnati capitalists are behind the enterprise.

Members of the Western Pottery Manufacturers' Association of East Liverpool, Ohio, are considering the starting of a co-operative cooper shop, on account of the coopers increasing the price of casks, barrels and crates from 20 to 30 per cent.

The Edwin M. Knowles China Co., Chester, W. Va., has been incorporated with \$150,000 capital stock. Incorporators are Edwin M. Knowles, Joshua Poole, and G. E. Davidson of East Liverpool, O., and T. B. Anderson and C. A. Smith of Chester, W. Va.

THE MARTIN CLAY WORKING MACHINERY

The Martin clay working machinery and brick yard appliances catalogue is at hand—a more complete catalogue has never been turned out.

The Martin company entered the field in 1858 and has had many years of experience as brick yard engineers and brick machinery designers. Their large plant is located at Lancaster, Pa., within easy reach from all parts of the country.

If you are interested in brick making machinery and want to see the latest catalogue, write to the Henry Martin Brick Machine Mfg. Co., Lancaster, Pa., and ask for catalogue No. 100.

SAND OR LIME BRICK OR BLOCK NEWS

Holbrook, Neb., can boast of an up-to-date cement brick plant.

W. R. Oyler of Laketon, Ind., is contemplating the erection of a new sand-lime brick plant.

Frank E. Bryant of Le Roy, N. Y., is making cement brick of standard size; making 20,000 daily.

The Enameled Concrete Co., Des Moines, Iowa, has been organized with \$2,500,000 capital stock to manufacture enameled brick.

The Laughlin Sandstone Brick & Cement Co., Canton, Ohio, has been incorporated with \$20,000 capital stock by John L. Robb and others.

The plant of the Bemidji (Minn.) Pressed Stone, Tile & Cement Co. has been sold to Ben Erickson and John Goodman by J. A. Ludington.

The Cynthiana (Ind.) Brick, Mining & Stone Co. has been organized with \$25,000 capital stock. Directors are G. F. Martin, E. B. Bixler and S. C. Newman.

The Industrial Association of Logansport, Ind., has recommended for manager of the proposed Logansport Sand-Lime Brick Co.'s plant, Arthur Boyer, who is a local contractor.

The Holland (Mich.) Brick Co.'s plant, owned by Geo. W. Streight, has been sold to Grand Rapids and Manistee parties, and will be operated as the Holland-Manistee Brick Co.

The Menomonie (Mich.) Brick Co. is now having built a large drying cylinder which when installed will double the capacity of the plant, so that they can then make 40,000 brick daily.

Preliminary arrangements have been made for the forming of a sand and lime brick company at Luverne, Minn. The factory will be located on the Griffin property southwest of town.

A number of business men of Elmore, Minn., are stockholders in a company that will build a cement tile factory. The company will convert the cement block factory into the new industry.

The Chisholm, Boyd & White Co., Chicago, have just made a shipment for export of a complete equipment for a sand-lime brick plant, including one of their six mould sand-lime special brick presses.

Nathan Woodman and others of Ann Arbor, Mich., have formed a company to manufacture sand cement brick and cement shingles. They are capitalized at \$8,000 and have already acquired the land.

The Rochester (Mich.) Sandstone Brick Co., which is owned by Detroit parties, are now building their plant. Charles B. Ebert has charge of the erection for the American Sandstone Brick Machinery Co. of Saginaw, Mich.

The Commercial Club of Topeka, Kan., is in communication with several parties to start a sand-lime brick plant to utilize the Kansas river sand. The Kansas City Gray Brick Co. and others are considering the location.

The Etruscan Brick Co., Ballston Spa, N. Y., has been incorporated with \$100,000 capital stock. The directors are Edwin G. Kastenhuber and Clifford J. Dailey of Schenectady, and Frank P. Van Alstyne of Ballston Spa. The plant will be built on the Smith property on Church Ave.

MISCELLANEOUS ITEMS

E. F. Church, will put in a brick plant at Joseph, Oregon.

C. B. Mayhugh of Demos, O., is trying to secure a brick plant for St. Clairsville by interesting local capital in the enterprise.

The National Drain Tile Co., Terra Haute, Ind., will build a tile plant at Springfield, Ill., just north of the Springfield Paving Brick Co.'s plant.

Mr. Phipps of Hawkins county, Tennessee, has purchased the Montgomery homestead of 500 acres at Leadvale, Tenn., and will erect a tile factory on the property.

Gilbert Plains, Manitoba, is to have the third brick plant this season, this one being started by Mr. Snyder of Portage, and it will have a daily capacity of 35,000 brick.

The two factory buildings for the Claytonia Brick & Clay Products Co. at Evansville, Ind., are completed and the machinery is being installed. George M. Uhl is manager.

The partnership between Thomas Salveson and Jabez Dawson at Petersburg, Ill., has been dissolved, and the brick-making plant will hereafter be conducted by Salveson Bros.

The Field Brick Co., Eleventh and Concord streets, Chester, Pa., is expending \$40,000 on improvements to their plant. State Treasurer William H. Berry is a part owner in the plant.

The Calera (Ala.) Brick Co. will establish a brick plant at that place. W. H. Merritt is president, A. J. Krebs, vice-president, and J. W. Hunter, general manager—all of Birmingham.

Thomas L. Ward of Toronto, O., has optioned 600 acres of Clay and coal land at Dundas, Vinton county, O., and is now preparing papers for the incorporation of a sewer pipe and brick company.

The plant of the Neshannock Brick and Tile Co. at Volant, Pa., started up the first of the month, after having undergone extensive repairs. Joseph Rice of New Castle is the president of the company.

The plant and equipment of the Diamond Fire Brick Co., Canon City, Colo., has been sold to S. C. Cowgill of Terre Haute, Ind., who will organize a new company and make extensive improvements to the plant.

The Berkeley Brick, Tile & Concrete Co., Martinsville, W. Va., has been incorporated with \$25,000 capital stock. Incorporators are: W. E. Gordon, Edgar Bowen, D. W. Weaver, W. H. Thomas, and J. L. King, all of Martinsburg.

The Onondaga vitrified Brick Co., Syracuse, N. Y., has elected the following new officers: J. B. Gere, president, to succeed J. B. McDonald, and L. Stilwell, director, to succeed H. B. Reed, and J. F. Plumb, secretary and treasurer and manager, to succeed himself, Messrs. Gere and Plumb having bought the McDonald and Reed interests.

The Portsmouth (O.) Refractories Co. is the style of a new company with \$50,000 capital stock. A modern fire brick plant will be erected at Eifort, on the B. & O. S. W. Ry. The incorporators are: Harry B. Errett, L. D. York, R. York, W. A. Hutchins, and O. W. Newman. Mr. Errett is the general manager, and the main office is at Portsmouth.

F. N. Jarvis of Valley, Wash., has bought a one-half interest in the Chewelah (Wash.) Brick Works, with S. M. McPherson.

August Detloff and John Hasenjager of Algoma, Wis., have leased the brick works of Ferdinand Storm and will operate same this season.

The Adams Brick Co., Indianapolis, Ind., has increased its capital stock from \$50,000 to \$150,000. F. B. Adams is the secretary of the company.

Crawford & Coble, Ellensburg, Wash., have leased a tract of land a mile south of town and will erect a hand moulding plant, making 15,000 brick daily.

The plant of the Fultonham Brick Co., located at Axline, O., has been sold to T. F. McClure & Sons Co. and the Kirchner Construction Co. of Cincinnati. It is valued at \$100,000.

The Superior Brick Co., Rockford, Ill., has elected the following officers: W. H. Marshall, president; P. F. Schuster, vice-president, and W. H. Hall, secretary-treasurer and manager, to succeed H. H. Block, who goes into the lumber and fuel business.

The Empire Brick Co.'s plant at Rockford, Wash., has been sold to the Rockford Brick Co., with W. T. Bacon president and manager, C. J. Johnson, secretary and treasurer. The plant will be put in first-class shape.

The Tennessee Ball & Sagger Clay Co. of Henry county, Tenn., has been incorporated with \$100,000 capital stock. Incorporators are: A. D. Noe, J. M. Crowe, J. K. Waller, Harry Watkins, J. D. Abbott and J. O. Manning.

Andred Dertinger, Genesee, Idaho, has bought of John Kimble his brick works, and will operate it.

The Canadian Polished Stone, Brick and Tile Co., Ltd., with \$1,000,000 capital stock, has been incorporated at Ottawa, Canada.

The Davidson Brick & Tile Co., Follansbee, W. Va., have started their plant in operation, and it is expected to enlarge some in a short time.

The Clay Center (Kan.) Brick Co. recently elected the following officers: William Leach, president; George White, vice-president and manager, and George Kreeck, secretary.

The Kelley Brick Co., Winchell, Minn., has made an application for daily telegraph service from the weather bureau as to the forecasts, so as to save loss on newly made brick.

At the annual meeting of the Shawnee Flash Brick Co., Columbus, O., F. Bauman was elected president; R. C. Reel, vice-president, and W. O. Copeland, secretary and treasurer.

The Dungan-Booth Brick Co., Seven Mile Ford, Va., has been organized by J. Dungan of Seven Mile Ford, and C. B. Booth of Knoxville, Tenn., and Joel Booth of Chilhowie, Va. They will make 40,000 brick daily.

It has been announced that the Premier Vitrified Brick & Tile Co., Coffeyville, Kansas, capitalized at \$200,000, has received pledges to carry out all its plans. R. L. Denison has been engaged in the preliminary work.

The Occidental Portland Cement Co. has been incorporated with \$2,000,000 under New Jersey state laws. The incorporators are employees of the New Jersey Corporation Trust Co., 15 Exchange Place, Jersey City, N. J.

The New San Francisco Continuous Kiln

is the only CONTINUOUS KILN having regenerative furnaces for burning bricks with CRUDE OIL or POWDERED COAL

This kiln has the greatest thermic efficiency, for the following reasons:

FIRST—A perfect system of regulating the velocity of gases through the kiln.

SECOND—No excess of air, such as is required in UP-DRAFT or DOWN-DRAFT kilns.

THIRD—Perfect air recuperation.

FOURTH—Perfect combustion.

FIFTH—Loss by radiation reduced to a minimum.

SIXTH—No cold air admitted with the fuel in the combustion chambers.

SEVENTH—Heat generated instantaneously.

EIGHTH—No delays, no waiting for the coal or other fuel to ignite, as in the ordinary continuous kiln.

NINTH—The burning bricks receive the full benefit of all the heat produced, as the combustion chambers are contiguous to the kiln.

TENTH—The amount of heat generated is at least 100% greater than that produced by coal screenings dropped between the burning bricks in a given length of time, in the ordinary continuous kiln.

CONSTRUCTION

This kiln can be constructed with 10% less material than the ordinary continuous kiln.

The outside and inside walls, etc., are left down to a point four feet below the coal-floor line of the ordinary continuous kiln, the arch only being built above this line.

There are no BAGS or BAG WALLS to take down and rebuild when the kiln doors are opened and sealed up.

Has no complicated system of flues.

Has no complicated system of GAS PRODUCERS.

Can be arranged for utilizing the surplus heat with a blower, no chimney being required in this case.

This system applied to a HOFFMAN KILN will increase its capacity at least 100 per cent.



WILLIAM A. BUTLER, Patentee, 34 Parkside Ave. San Francisco, Cal.

J. S. Morgan, Albany, Ore., will burn several kilns of brick this season.

The Clearfield (Pa.) Clayworking Co. will enlarge their plant and make many decided improvements.

The Collinwood (O.) Shale Brick Co., and the Deckman-Duty Co., at Carrollton, O., have been consolidated, and are now operating at the Collinwood-Deckman-Duty Co.

The Waverly (Va.) Brick Co. has been incorporated with \$5,000 capital stock, by John Sailes, President; W. C. Carr, general manager, and R. T. West, secretary and treasurer.

The Putnam Brick & Merchandise Co., Bancroft, W. Va., has been incorporated with \$10,000 capital stock. The incorporators are L. E. Shower, W. M. Walters, and A. J. Lyons.

The brick works of the Pittsburg Building, Tunnel & Fire Brick Co., Graytown, Pa., has been bought by Cyrus Echard of Connellsville. He has placed the plant in operation and with the installation of some new machinery will increase the capacity of the plant.

The American Ice Securities Co., Jersey City, N. J., has amended its charter so as to permit the company to engage in other business as well as ice cutting. W. M. Oler, the president of the company, said that the ice trust would make brick and deal in building material.

The tile works at Amboy, Ind., operated by Ridgway & Lamm, has changed its name to the Amboy Tile Co., and several other stockholders taken into the company. It is the purpose of the company to run the plant at its fullest capacity and make several improvements.

The Houma (La.) Brick Co., Ltd., has commenced the manufacture of brick under the management of M. H. Webb.

The Standard Brick Mfg. Co., Evansville, Ind., will put in its West Heights yard a continuous kiln of 22 compartments, holding 40,000 brick each.

The Newport (Ky.) Brick, Coal & Supply Co. has been incorporated with \$2,000 capital stock by August Helmbold, Emilie Schmidt and Fred Schmidt, all of Newport.

The Salina (Kan.) Vittrified Brick Co. has become the property of D. A. Van Trine, F. C. Hadden and W. R. Whitney. The new owners of the company will double the capacity of the plant.

The plant of the Swift-Campbell Brick Co., Ottumwa, Iowa, has been sold to H. B. Ostdick & Sons. The new owners will increase the capacity of the works and will add tile-making machinery.

Homer P. Trisch, owner of the Mt. Pulaski (Ills.) Brick & Tile Works, has purchased land on the I. C. Ry., and will in the near future erect a new modern factory with railroad facilities and up to date.

The Benton Harbor (Mich.) Brick & Tile Co. have installed a 50 h. p. electric motor for power to drive the machinery and will use the engine and boiler to create steam to dry the brick. Alderman J. J. Miller is president and general manager of the company.

W. A. Dodd, Hickman, Ky., has purchased the machinery and will install a steam power pressed brick works.

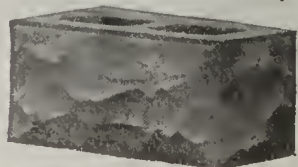
Inquiry No. 1025, Bureau of Manufacturers, Washington, D. C., asks for a complete brick making plant to go to South America, same to be in operation by September 1st.

To Make The Winning Bid

The Ideal Concrete Machine makes it possible to cut your bid without cutting you profit.



material in back of blocks. Adaptable to the manufacture of five different systems of blocks Hollow, Solid, Veneer, Two-piece, and Continuous, in various shapes and sizes. The same machine makes countless designs of face, and natural stone effect. (See illustration.)



It is impossible to underbid the contractor who manufactures his own Ideal Concrete Building Blocks with an Ideal Concrete Machine.

The marvelous simplicity and rapidity of the Ideal Machine makes it possible to produce Ideal Concrete Blocks at a cost that makes the lowest bid a profitable one. May be successfully operated by any one without previous experience or other assistance.

Ideal Blocks are adapted to any possible architectural design, and excel all other materials in fire and weather-proof qualities

IDEAL Concrete Machinery

Embodies the only principle (faced down) permitting the use of rich facing material with less expensive systems of blocks. (See illustration.) Practically everlasting. Not a chain, spring, wheel or cog in its construction. Catalog and valuable facts of builders free on application.

IDEAL CONCRETE MACHINERY CO.
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W. H. C. MUSEN & CO., Montreal, Canada
Sole Agents for Canada

DIRECT HEAT

DRYERS

FOR

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American Process Co.,
62-64 William St. NEW YORK CITY

Judge James Vincent of Soldier, Ky., has closed a deal whereby the town of Soldier secures a large fire brick plant.

The Rockford (Wash.) Brick Co. has been incorporated with \$15,000 capital stock by G. M. Gould and J. W. Hughes.

The Ostrander (N. J.) Fire Brick Co. re-elected the old officers and voted to make many improvements to the New Jersey plant.

Common brick at Portland, Oregon, are \$13.00 per thousand and any number of buildings are stopped for lack of brick to finish the job.

The new plant of the Muskogee Brick & Terra Cotta Co., Columbus, Ga., started to work the middle of the month. John T. Fletcher is the president. The plant is estimated to cost \$150,000.

The Wooster (Ohio) Shale Brick Works has changed hands and W. R. Barnhard, of the Commercial Bank, is now the sole owner. The plant has been placed in splendid shape since its purchase by Albert Shupe and W. R. Barnhard some time ago.

The Topeka (Kan.) Vitrified Brick & Tile Co. has been incorporated with \$15,000 capital stock. The stockholders are H. S. Andrews, Wm. Moeser, E. B. H. Remley, A. A. Rodgers, F. H. Doster, F. S. Davis and J. C. Dolman. They have taken over the Rodgers Brick Works, which was established 16 years ago by Capt. J. S. Earnest, and operated by him until he died a year ago. The plant will be remodeled and enlarged.

C. E. Poston is pushing the work with forty men on the new brick plant at Attica, Ind.

C. Ericson, Yorkton Ass'n, Canada, is to have a brick works. Also the Doukhofors propose to have a yard.

A common and pressed brick plant will be started at Grand Rapids, Minn. The company has already been organized.

Brown & Harwell, Davidson, N. C., have put in machinery from Charlotte at the old south end yard and will soon make brick.

W. R. Whitney of Salina, Kan., is considering the building of a large brick works at Garnett. The matter is now before the Commercial Club.

C. J. Duntun, who has been connected with the Conguinez Brick & Tile Co., Martinez, Cal., will be at the head of a new enterprise that has ordered machinery for another plant.

Henry Matthews, Northampton, Mass., has completed extensive improvements at their brick works on South street, by installing a 50 h. p. gasoline engine for power purposes.

Elsmore, Kan., is to have a brick making plant. R. E. Cox and other business men are interested in making the tests. The plant will be on the M. R. & T. Ry., one mile north of town.

The Montgomery (Ala.) Brick & Tile Co. has been incorporated with \$100,000 capital stock. The incorporators are H. B. Battle, I. S. Stanton, J. W. Kelly and E. W. Stay. The company purchased the McIntyre Brick Co. and the Excelsior Brick Works.

The Ideal Brick Kiln

SHOULD BE

Cheap and durable and have a big daily capacity.

In order to save fuel it should be of the continuous type.

To produce clean colored bricks without cracks, the preliminary drying should be performed in chambers separated from the burning compartment proper, according to the principle of the common up-draft kiln.

The heat from the already burned cooling bricks should preferably be used to lighten the burning proper.

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Willing to go anywhere. Best references.

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On account of too much other business to look after I will give you a bargain on a first-class brick and tile plant located at Edgewood, Clayton County, Iowa. For particulars write.

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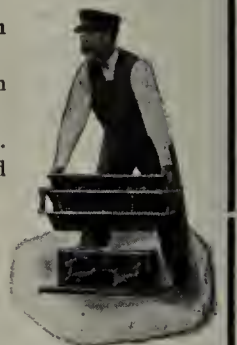
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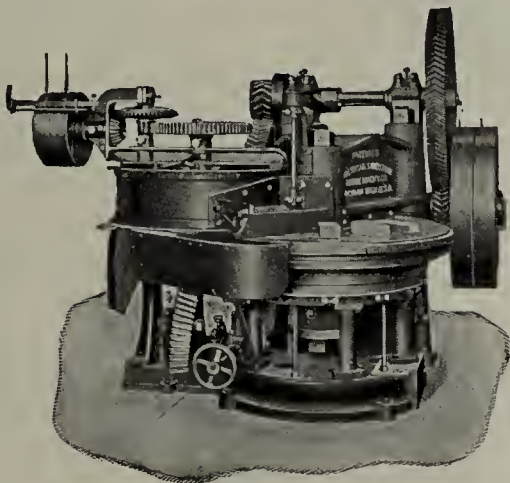
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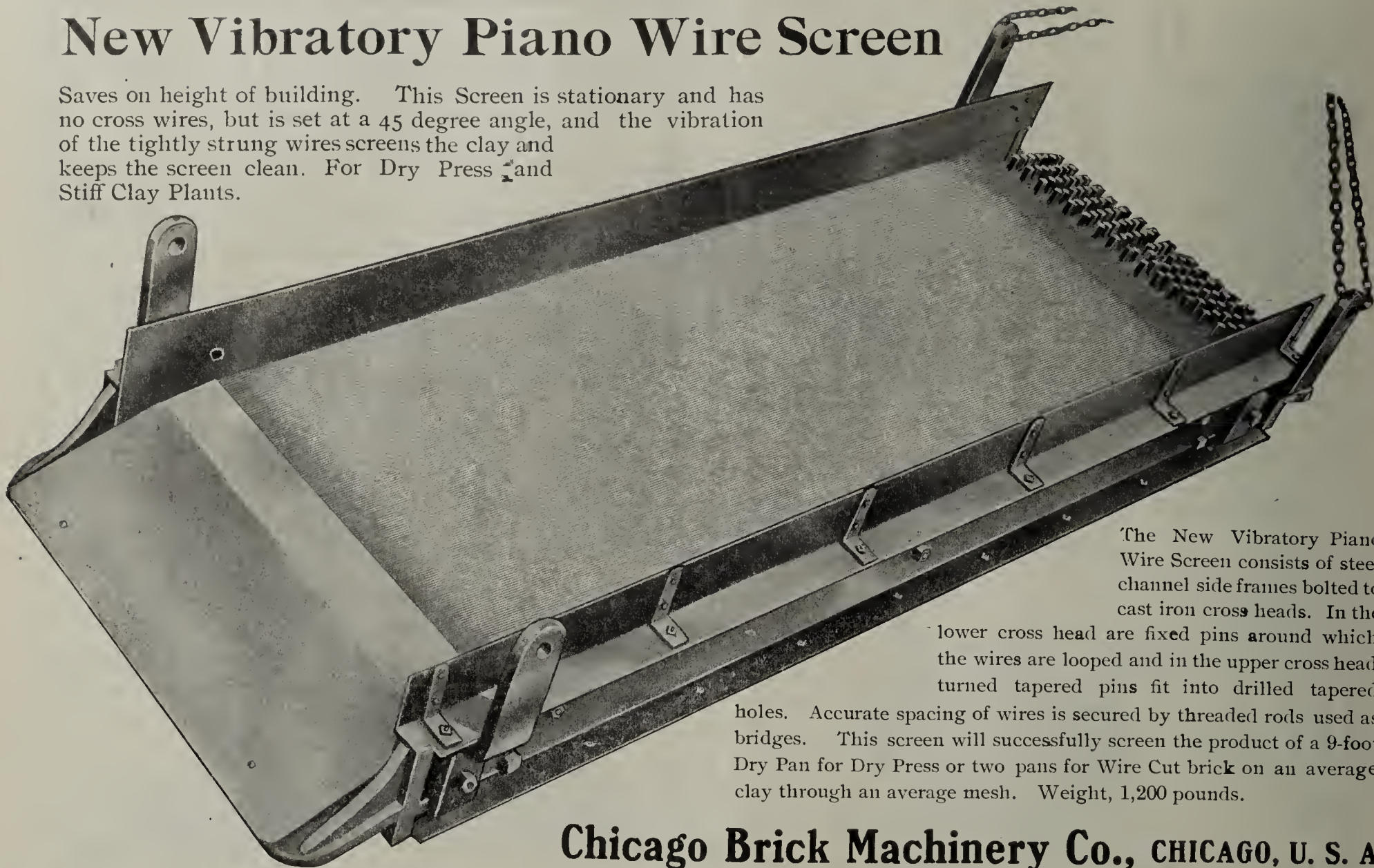
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The New Vibratory Piano Wire Screen consists of steel channel side frames bolted to cast iron cross heads. In the lower cross head are fixed pins around which the wires are looped and in the upper cross head turned tapered pins fit into drilled tapered holes. Accurate spacing of wires is secured by threaded rods used as bridges. This screen will successfully screen the product of a 9-foot Dry Pan for Dry Press or two pans for Wire Cut brick on an average clay through an average mesh. Weight, 1,200 pounds.

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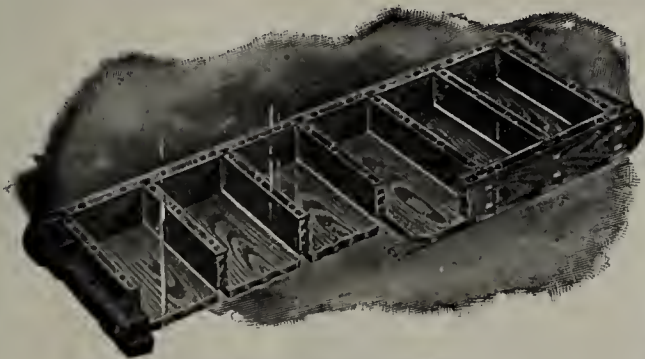
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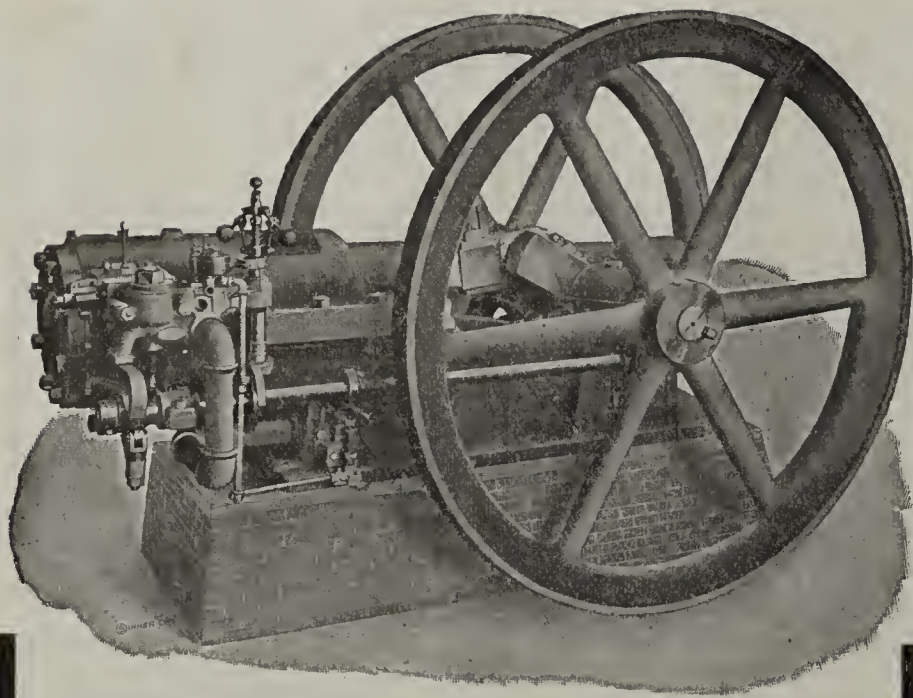
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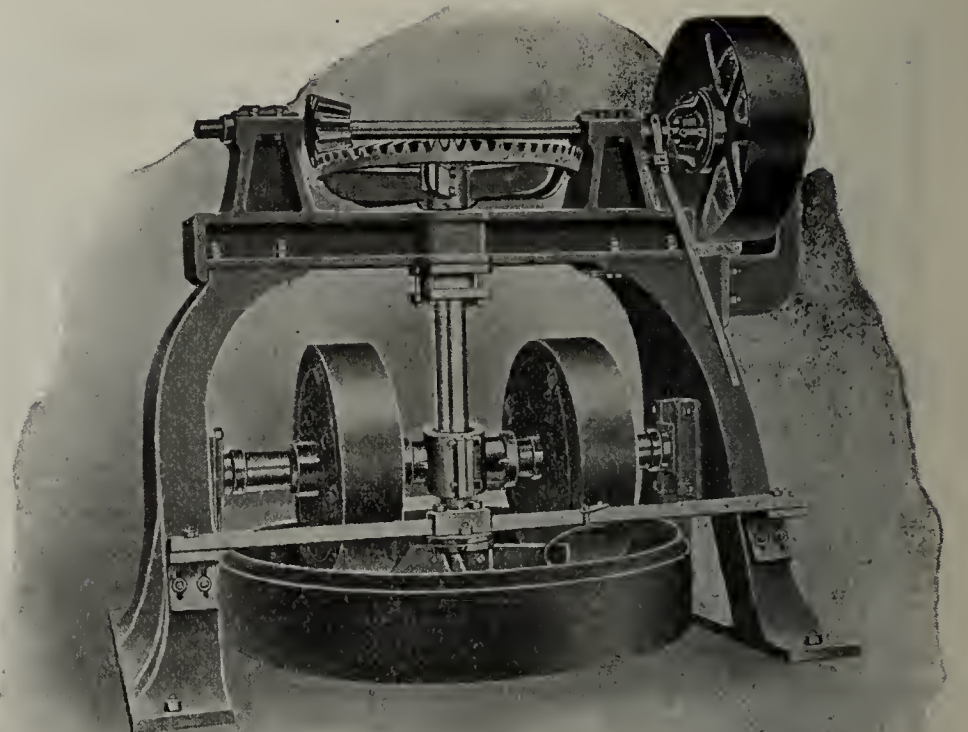


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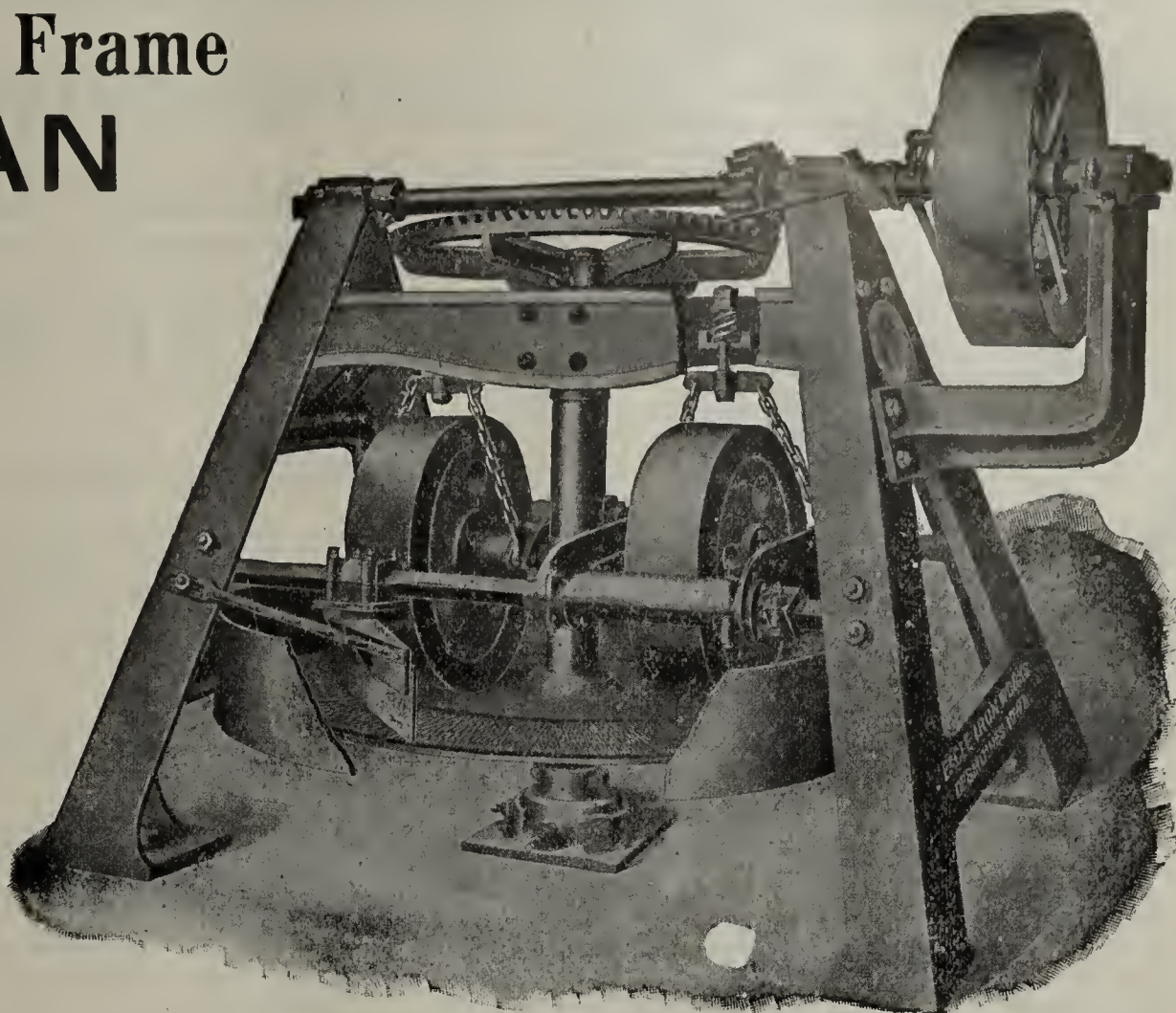
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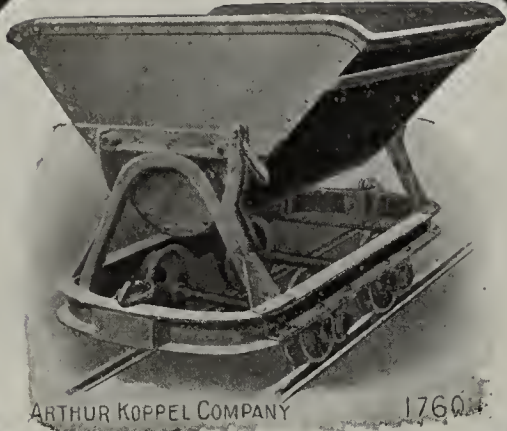


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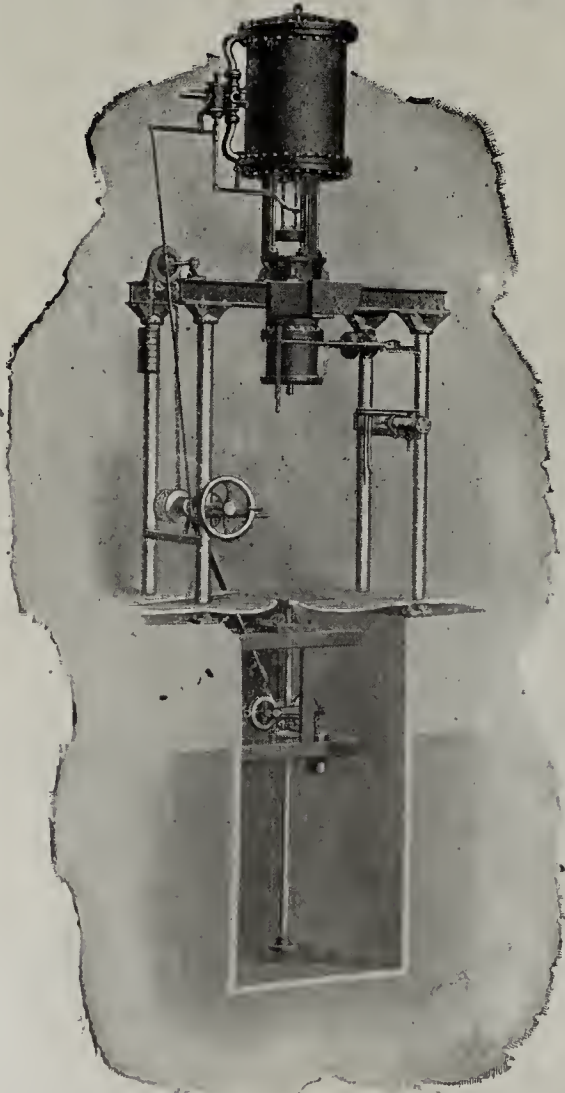
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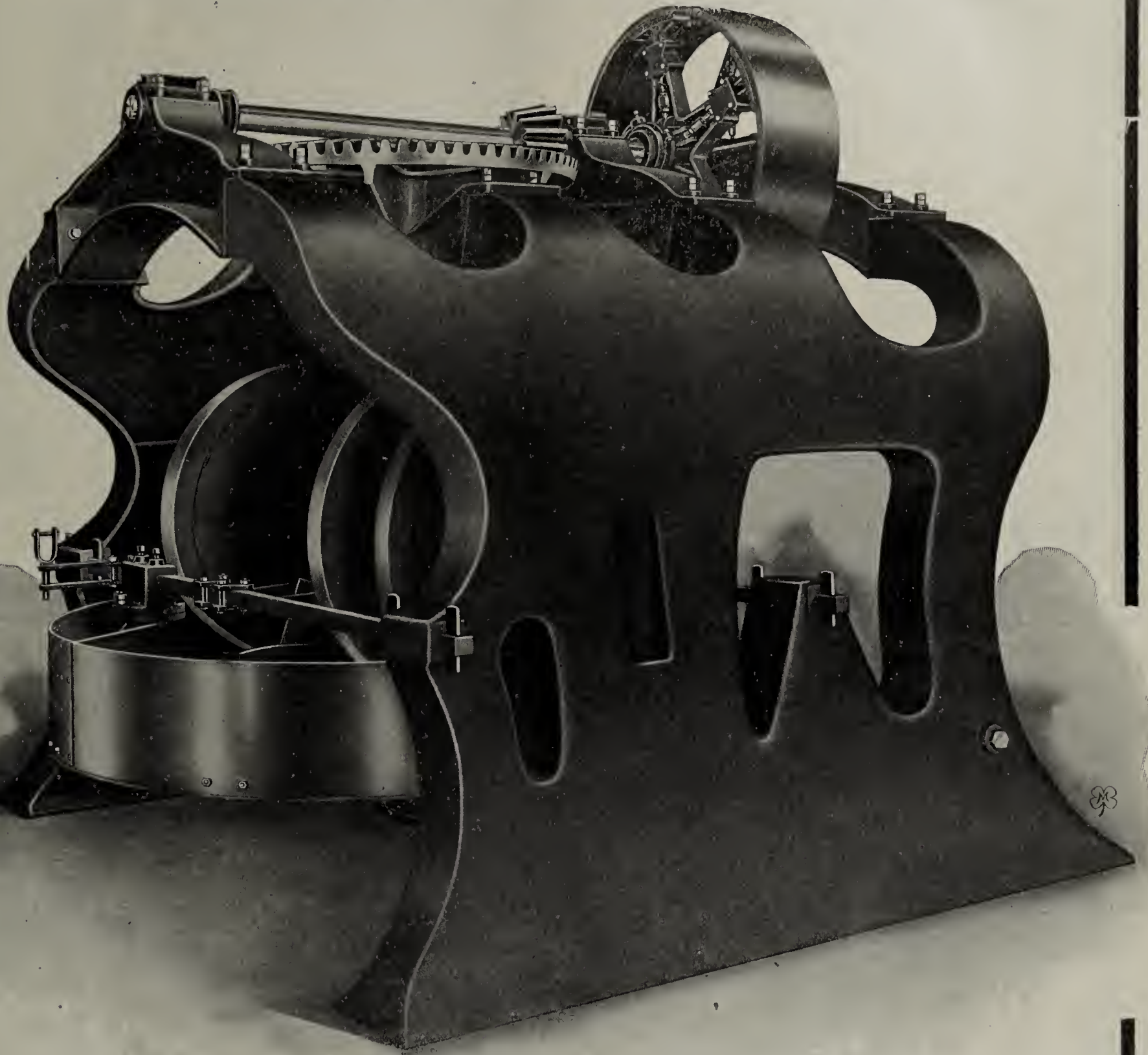
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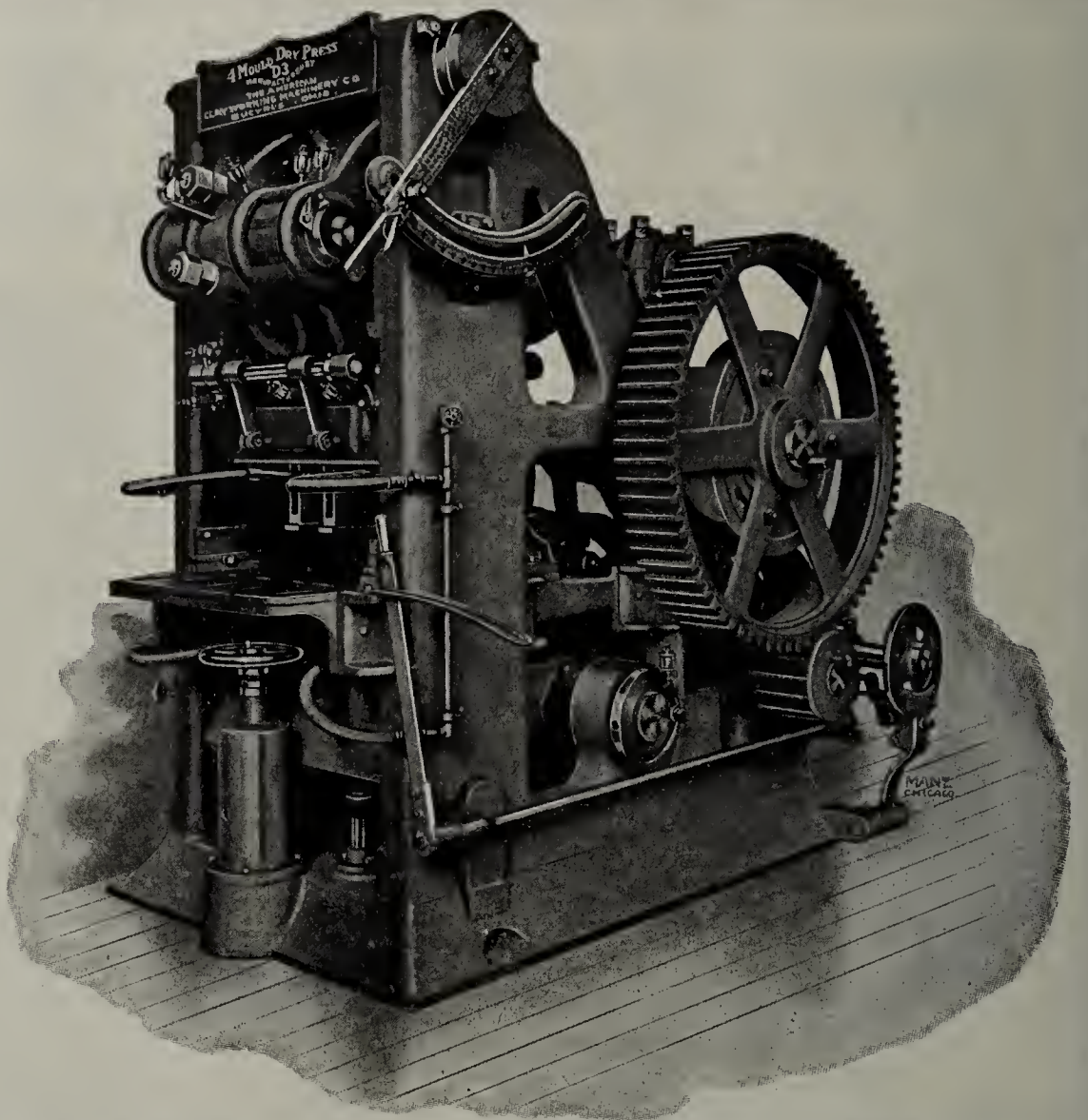
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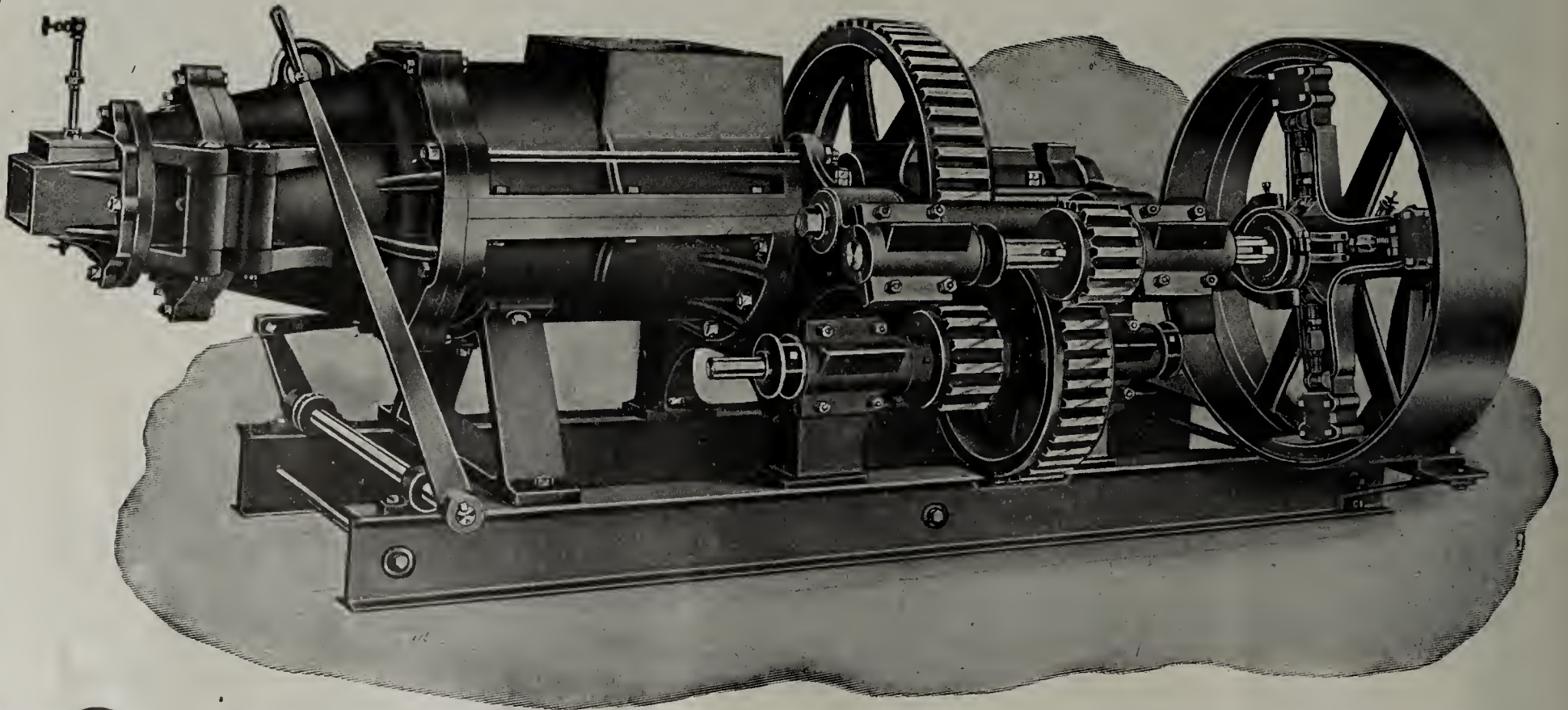


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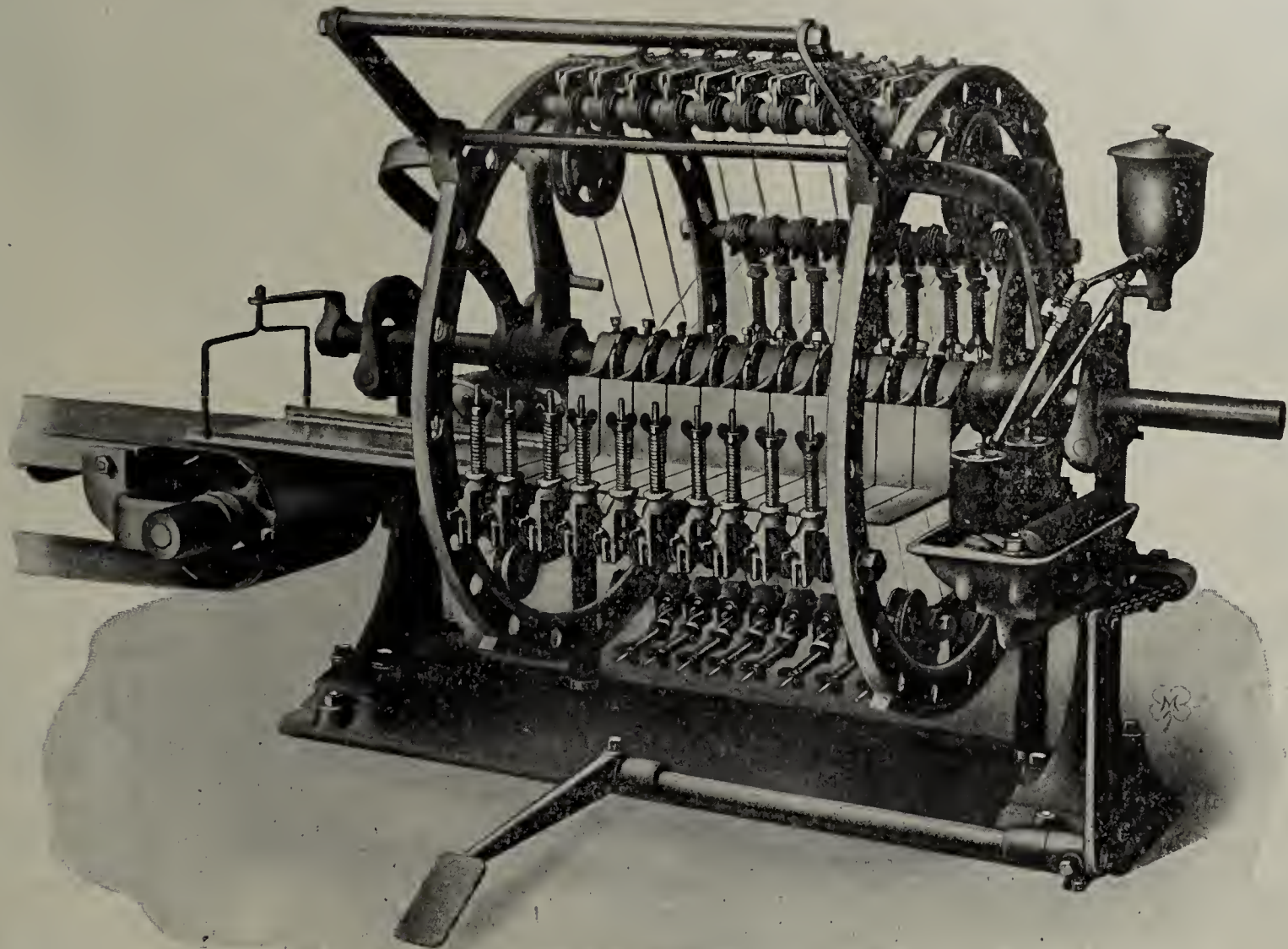


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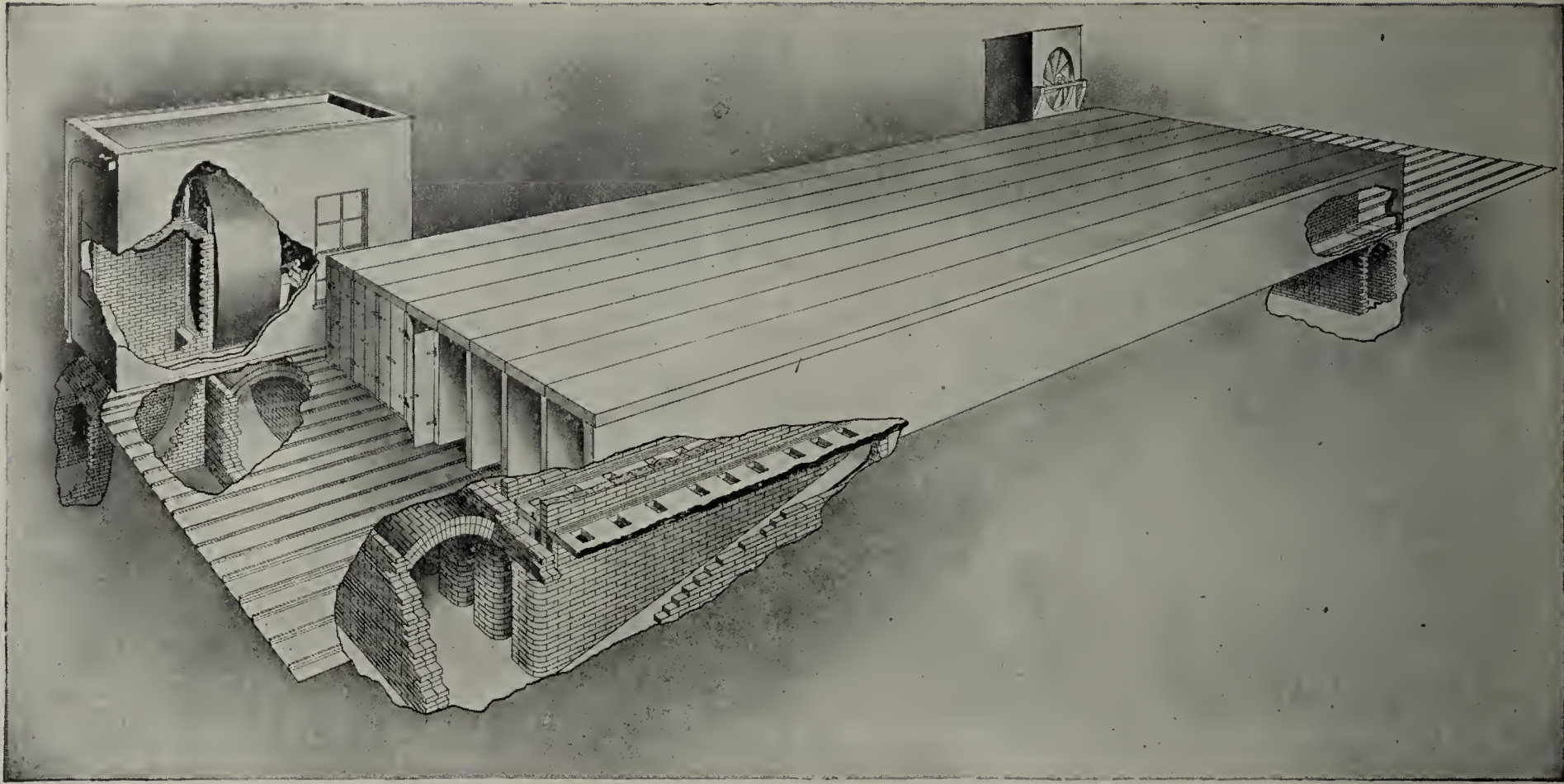
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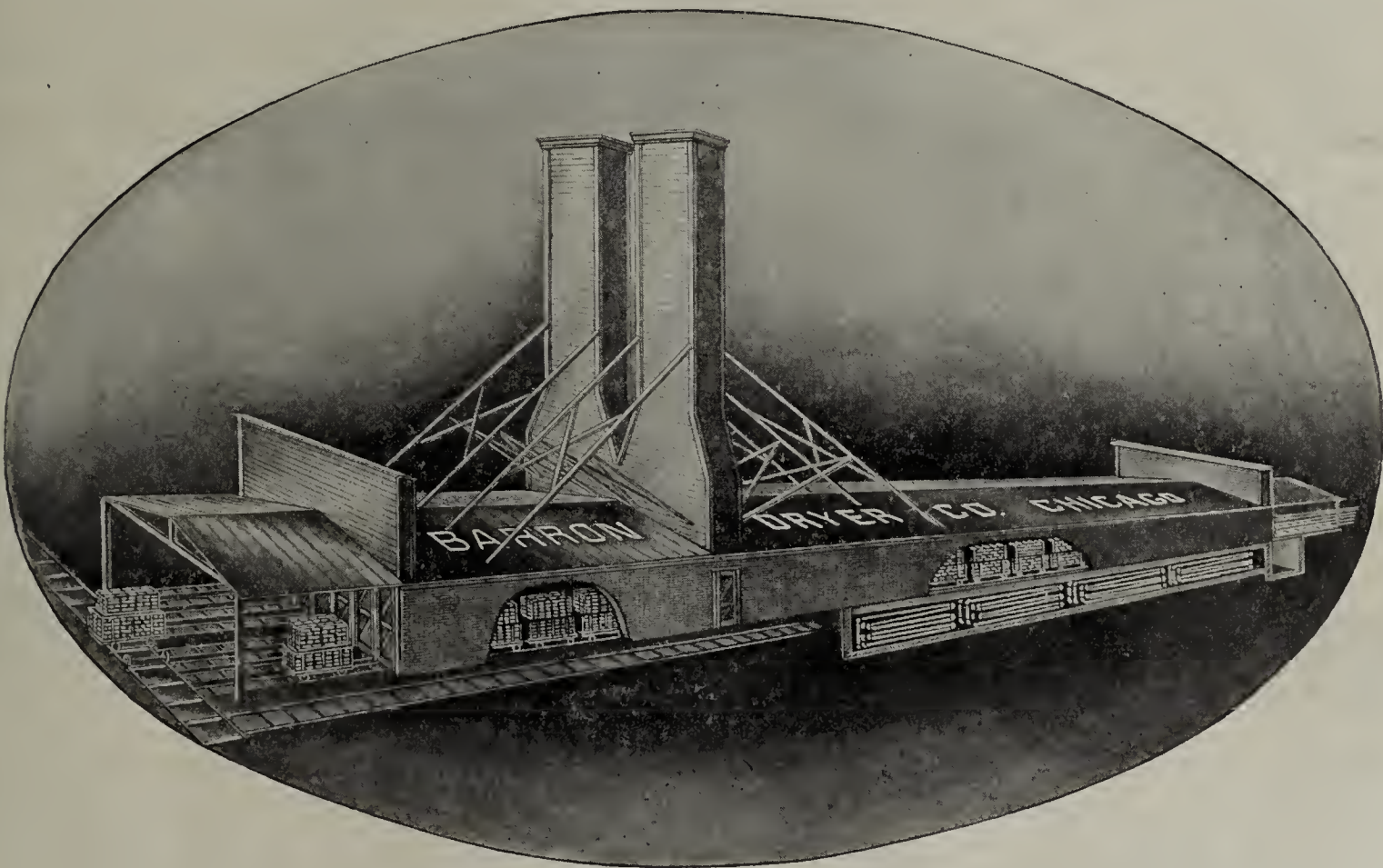
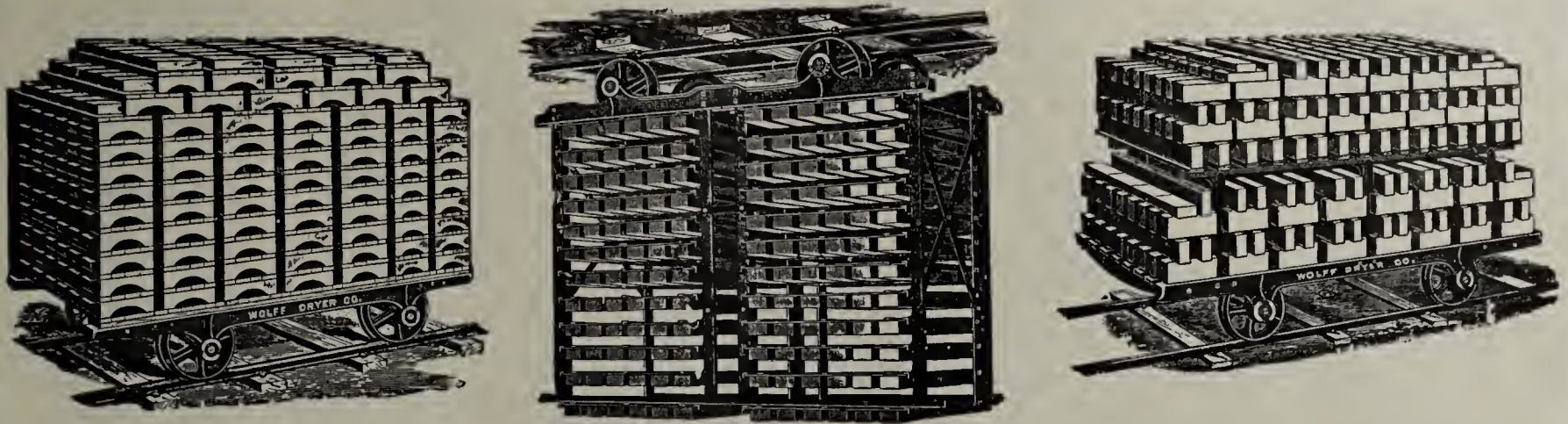
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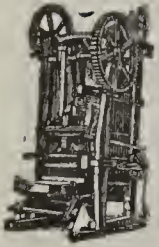
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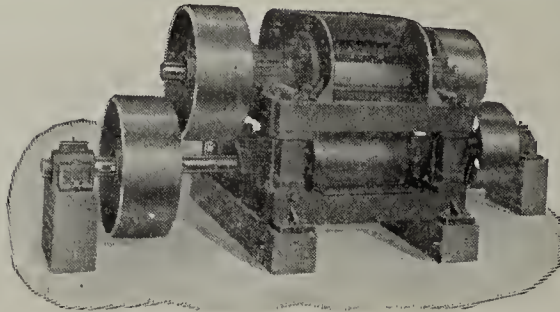
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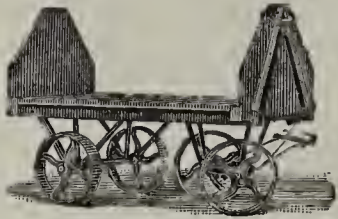


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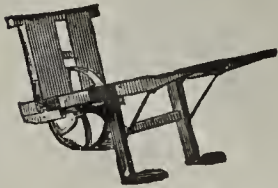


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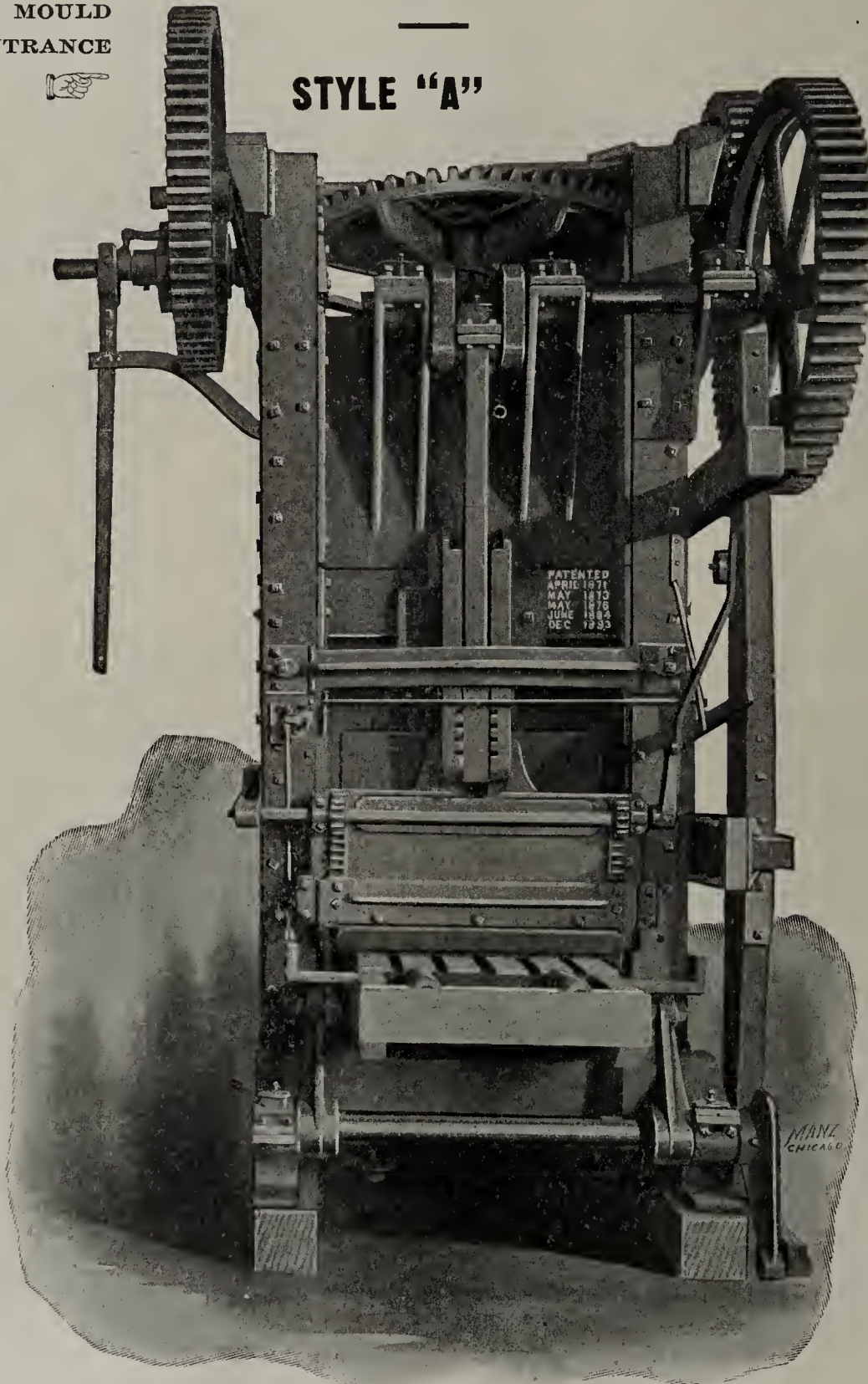
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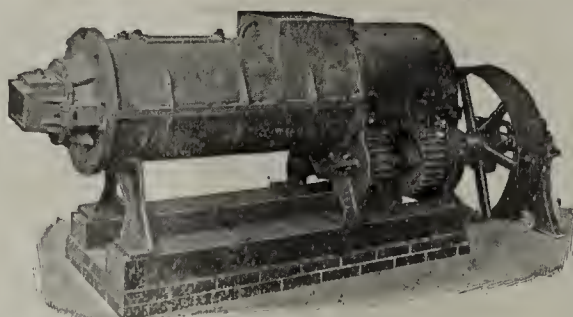
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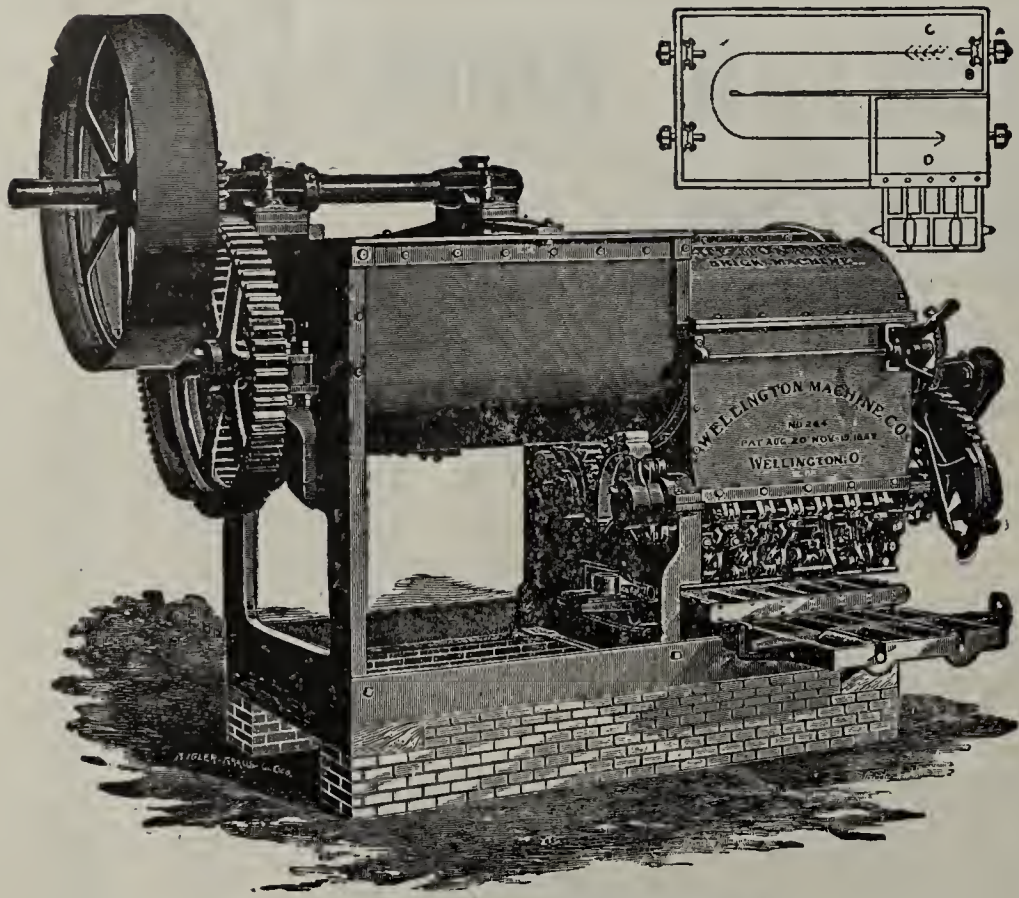
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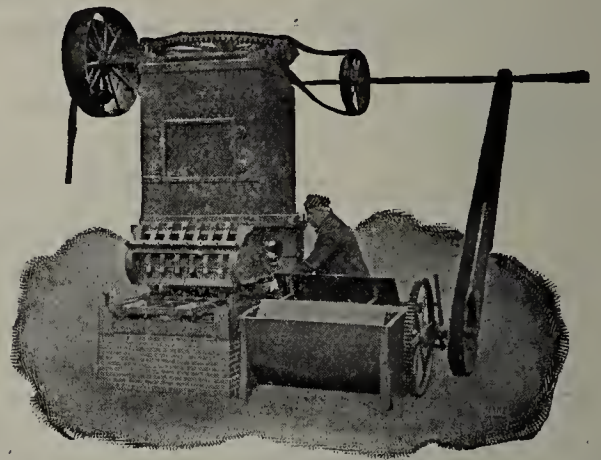
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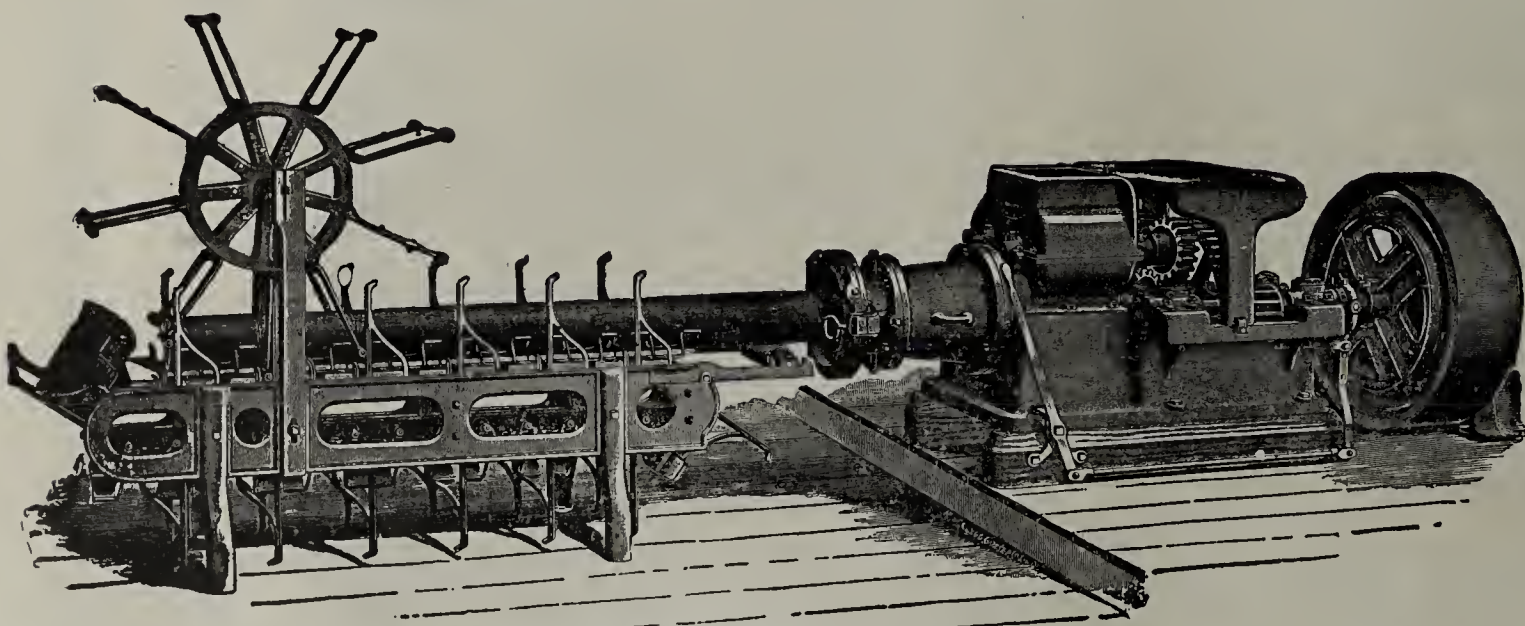
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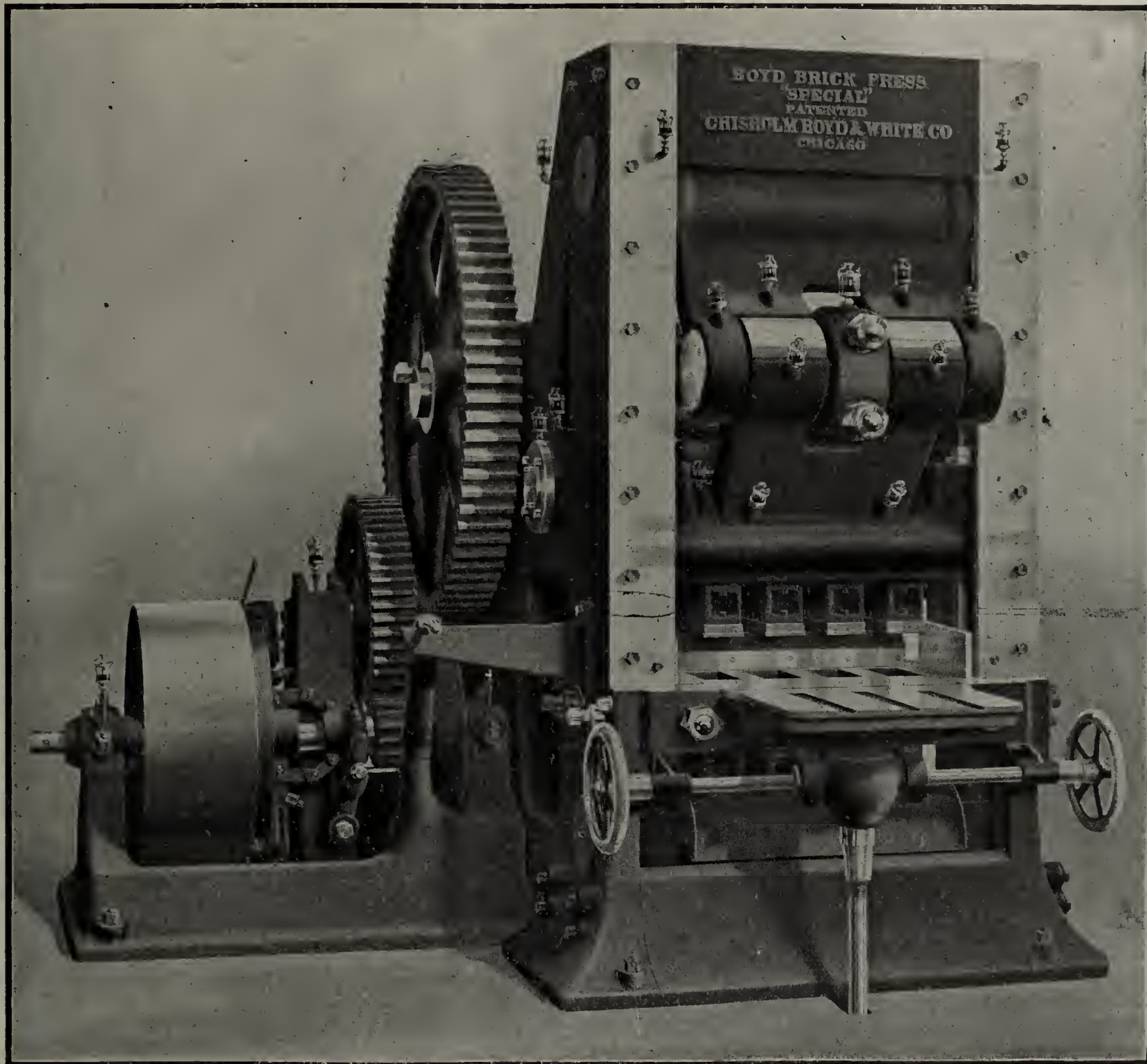
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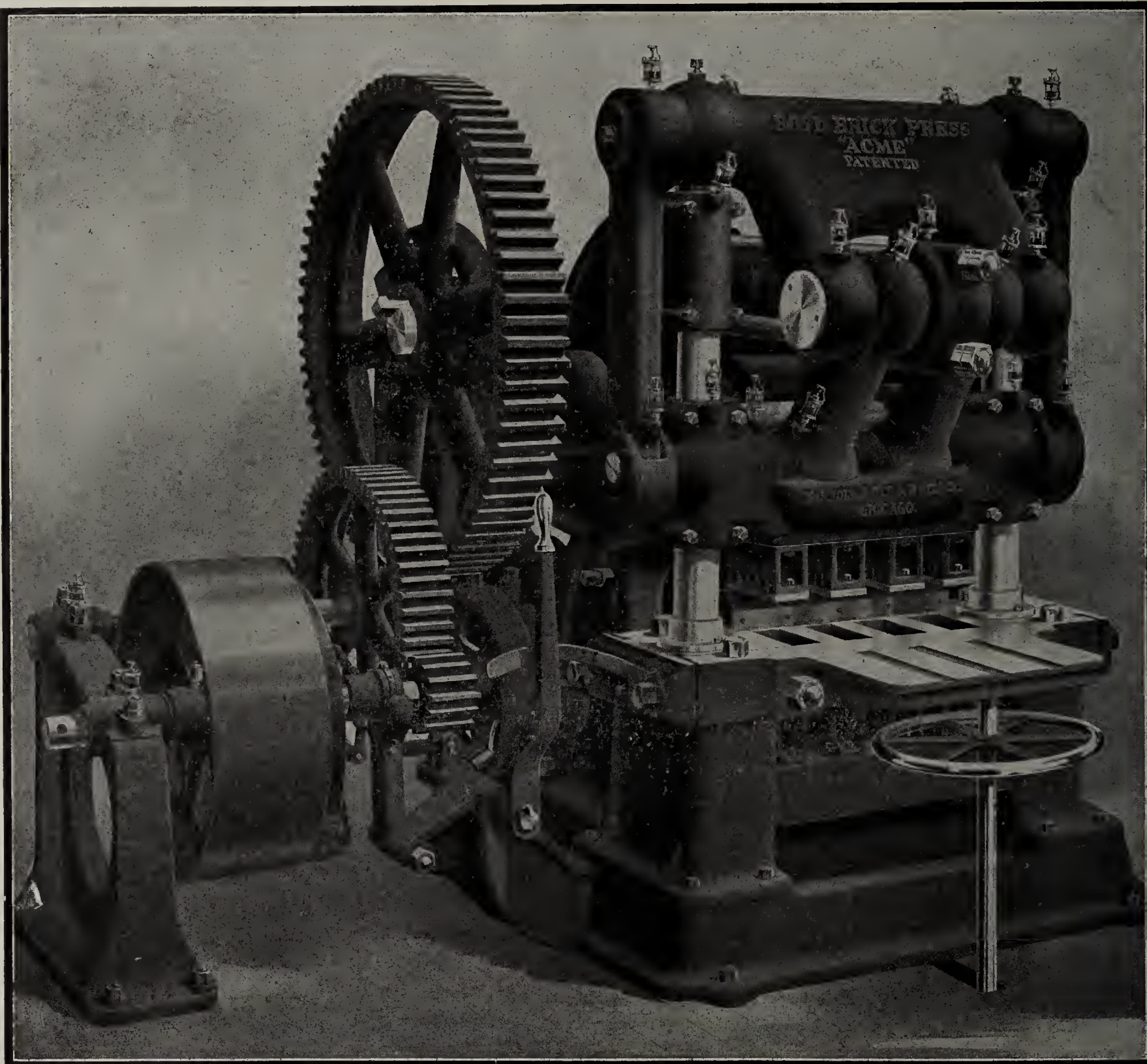
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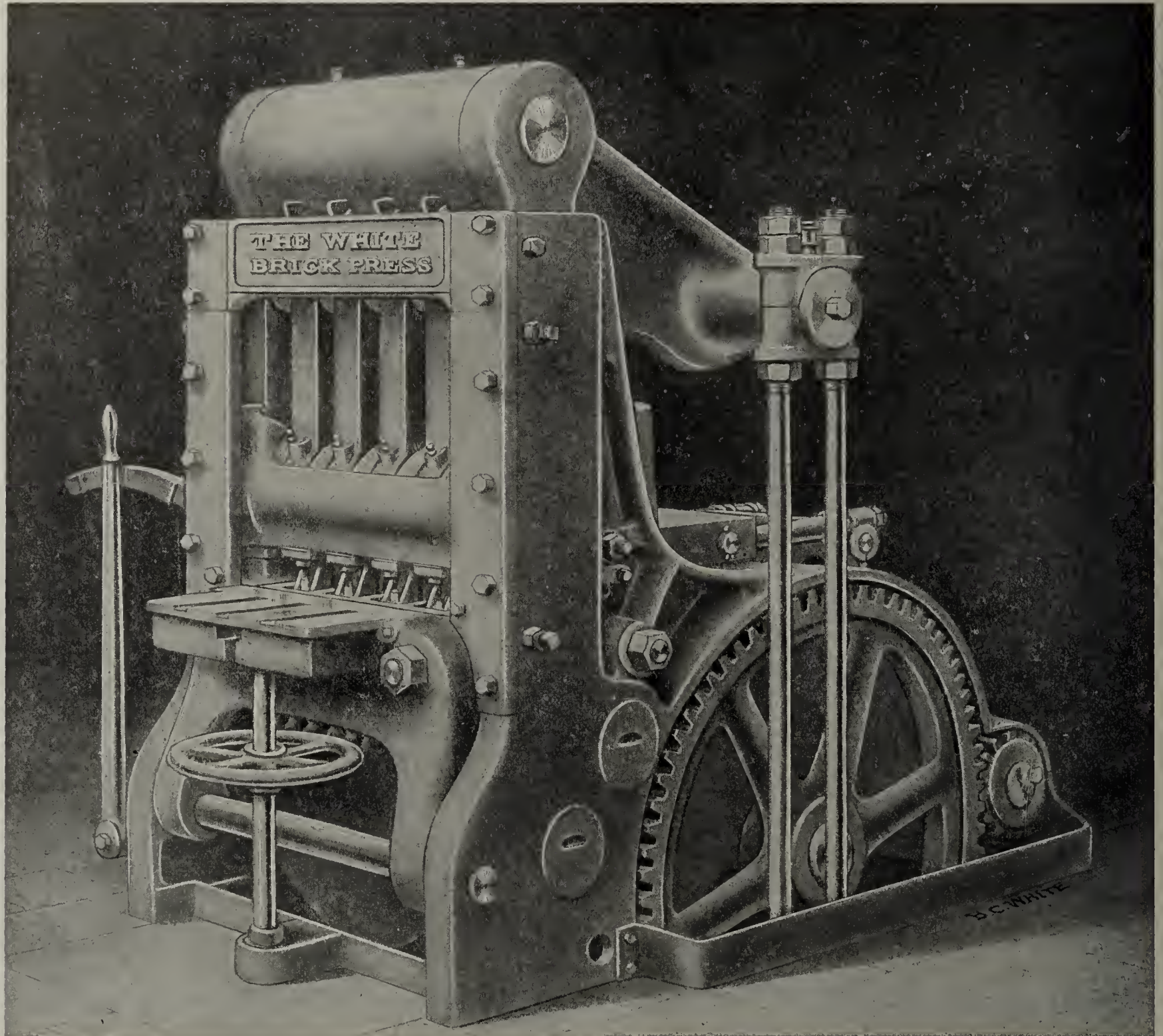
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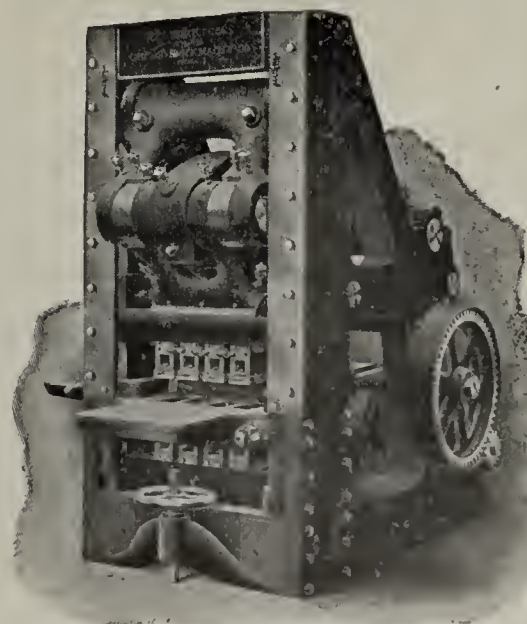
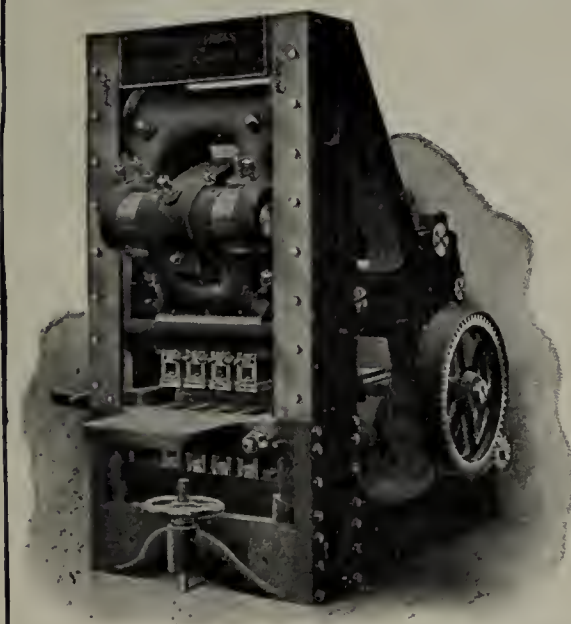
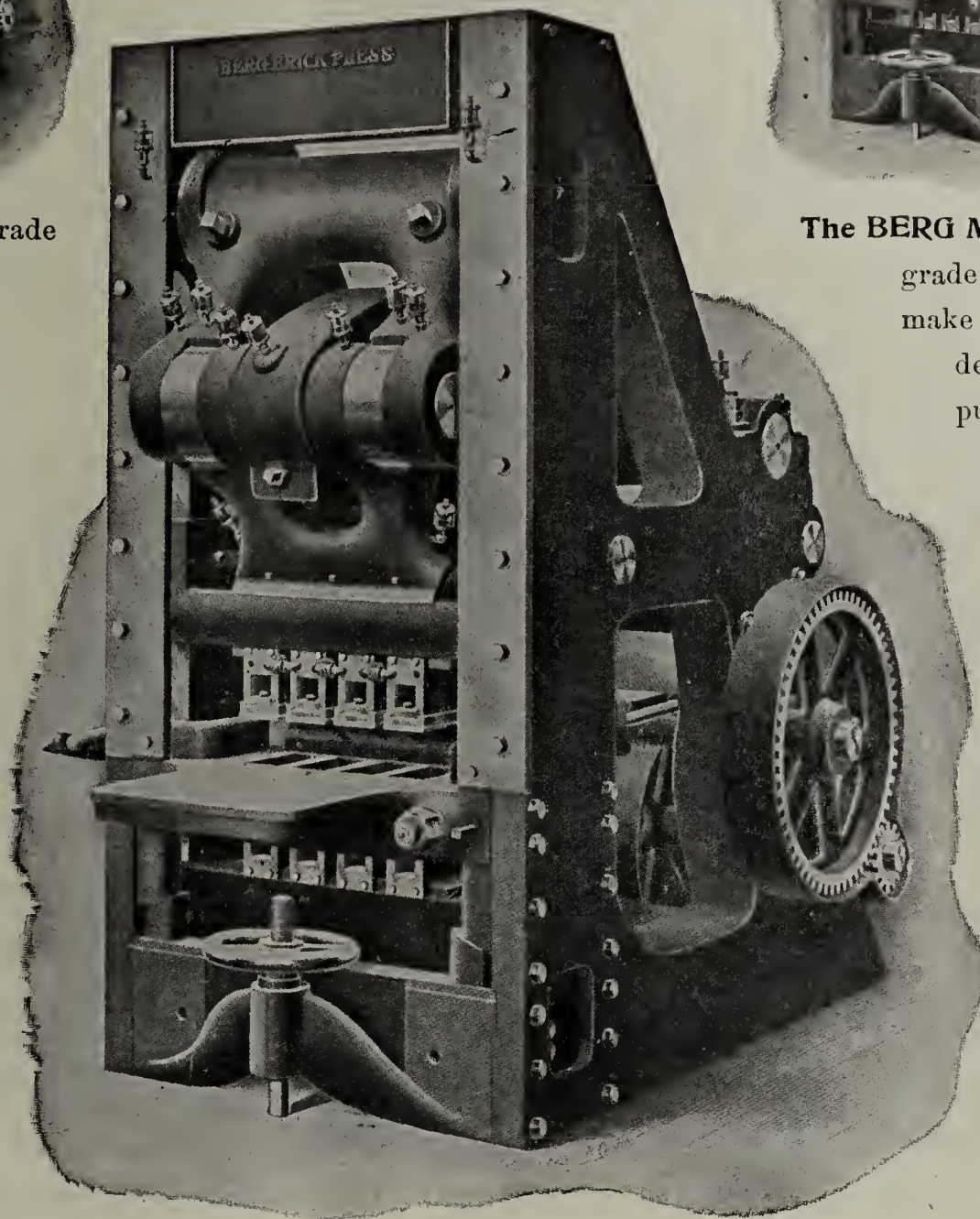
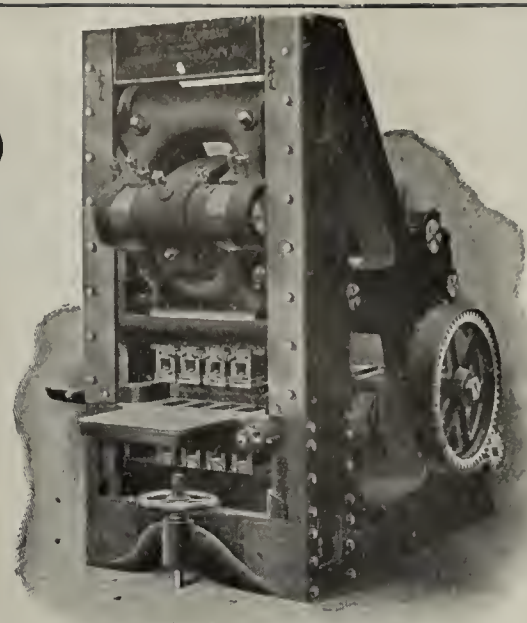
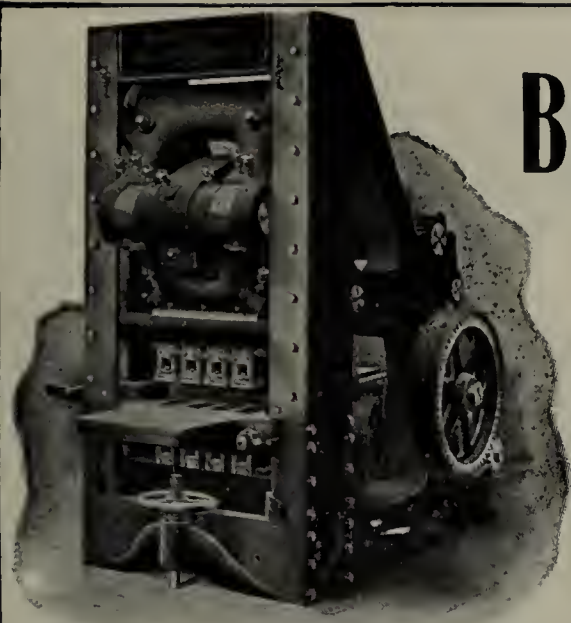
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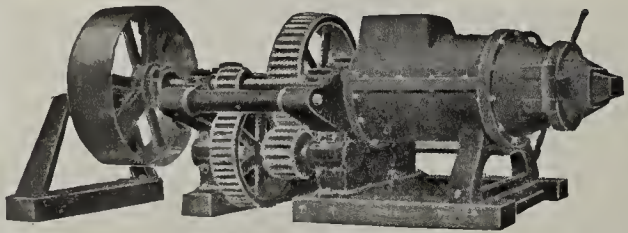
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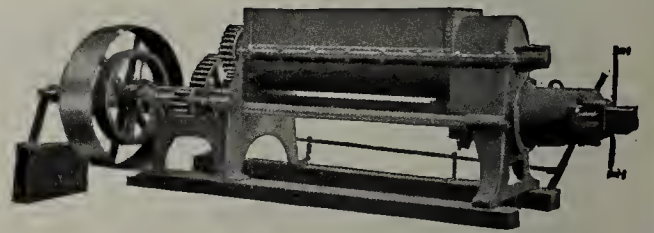
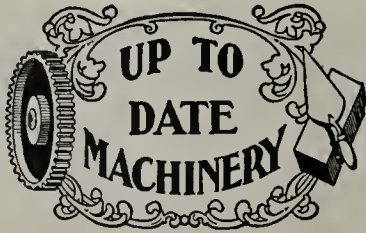
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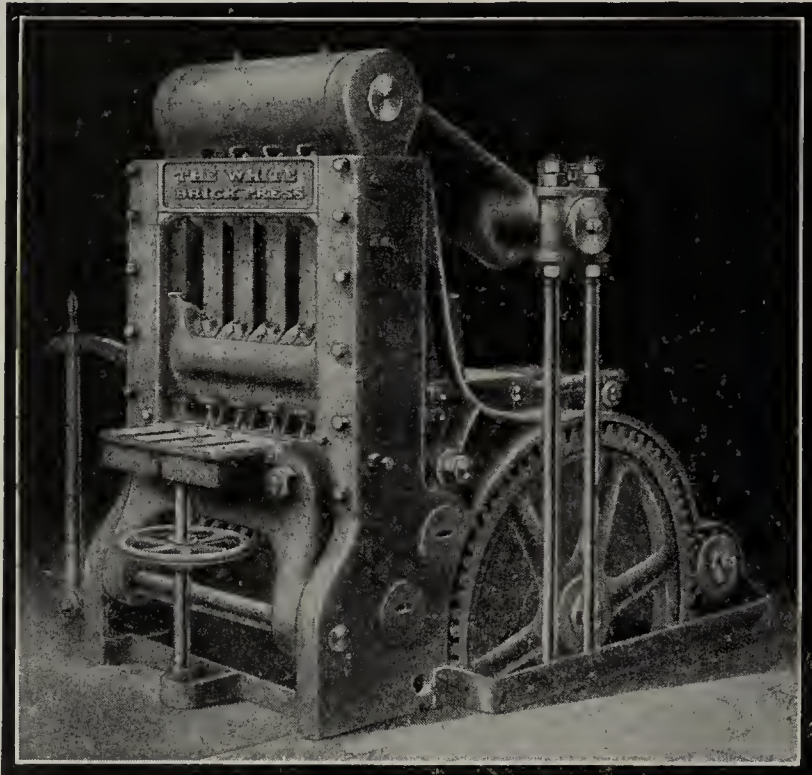
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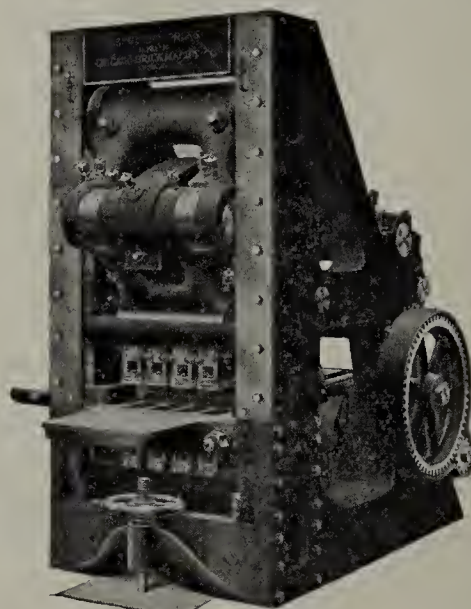
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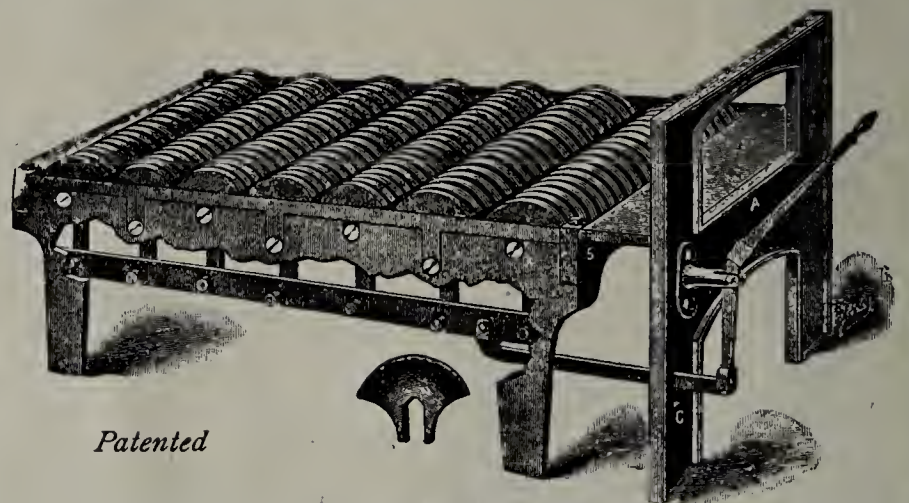
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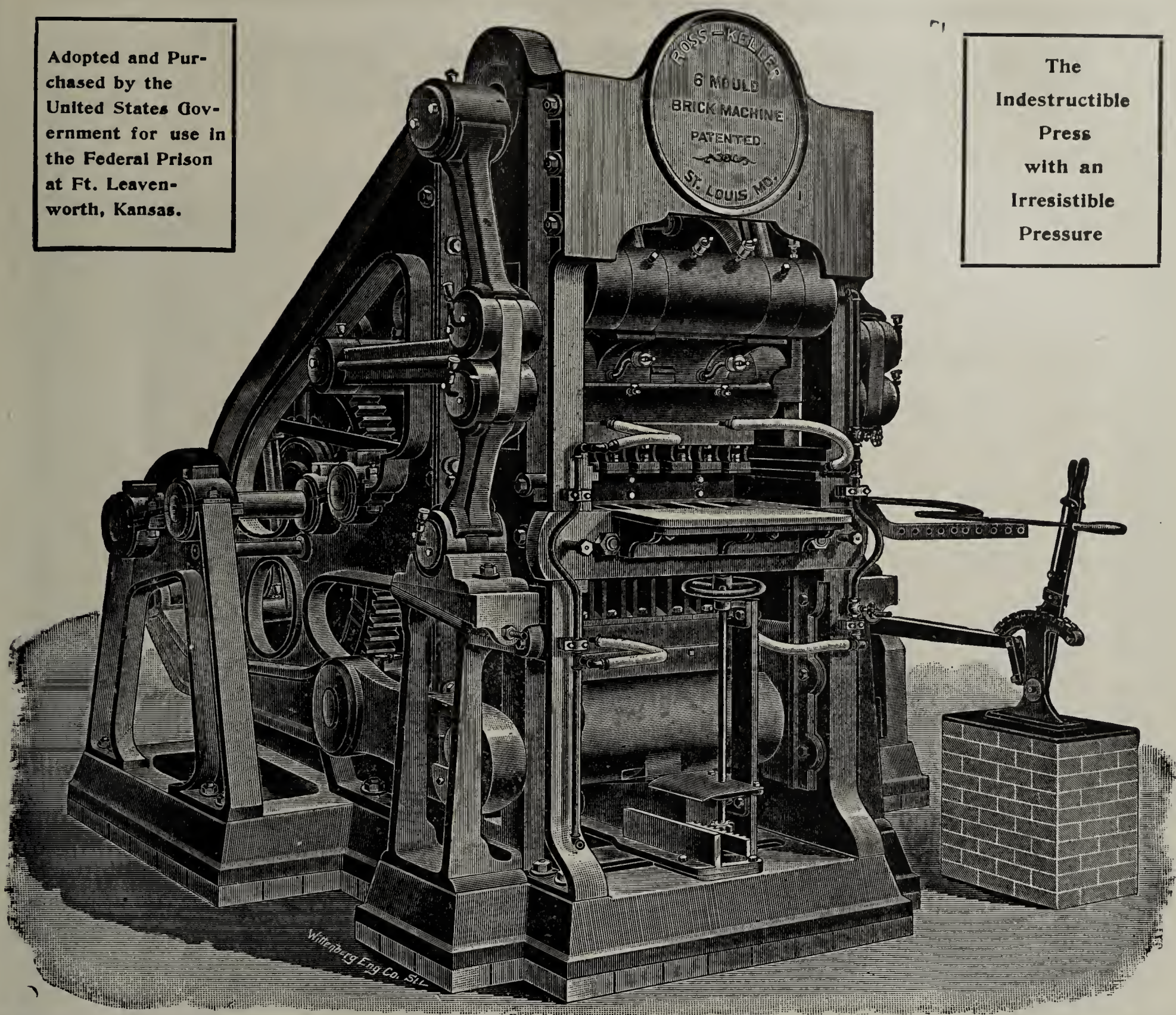
U. S. SELF CLEANING GRATE
In position ready for use. Part of frame cut away to show connection below.

Chicago Brick Machinery Co.

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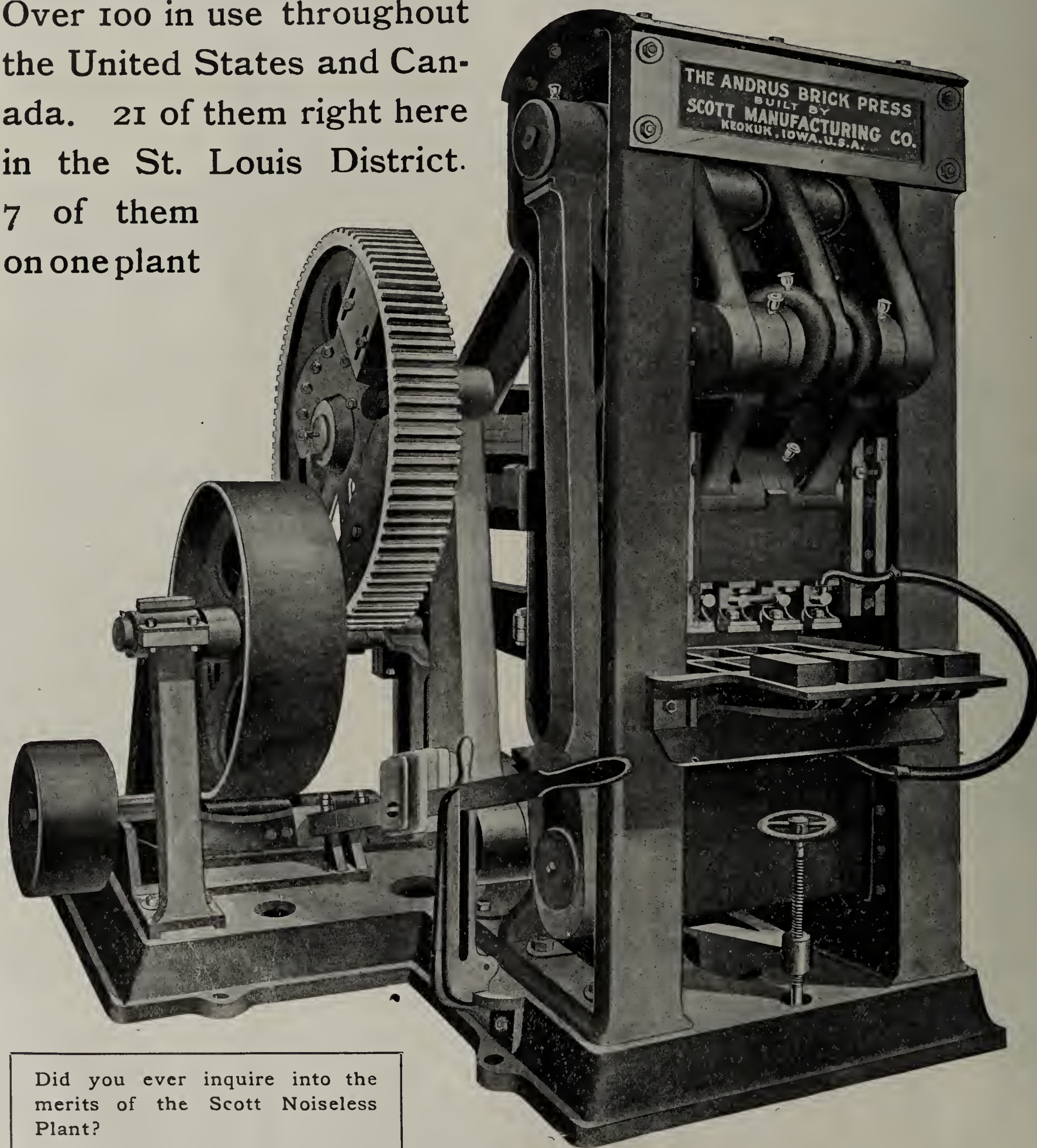
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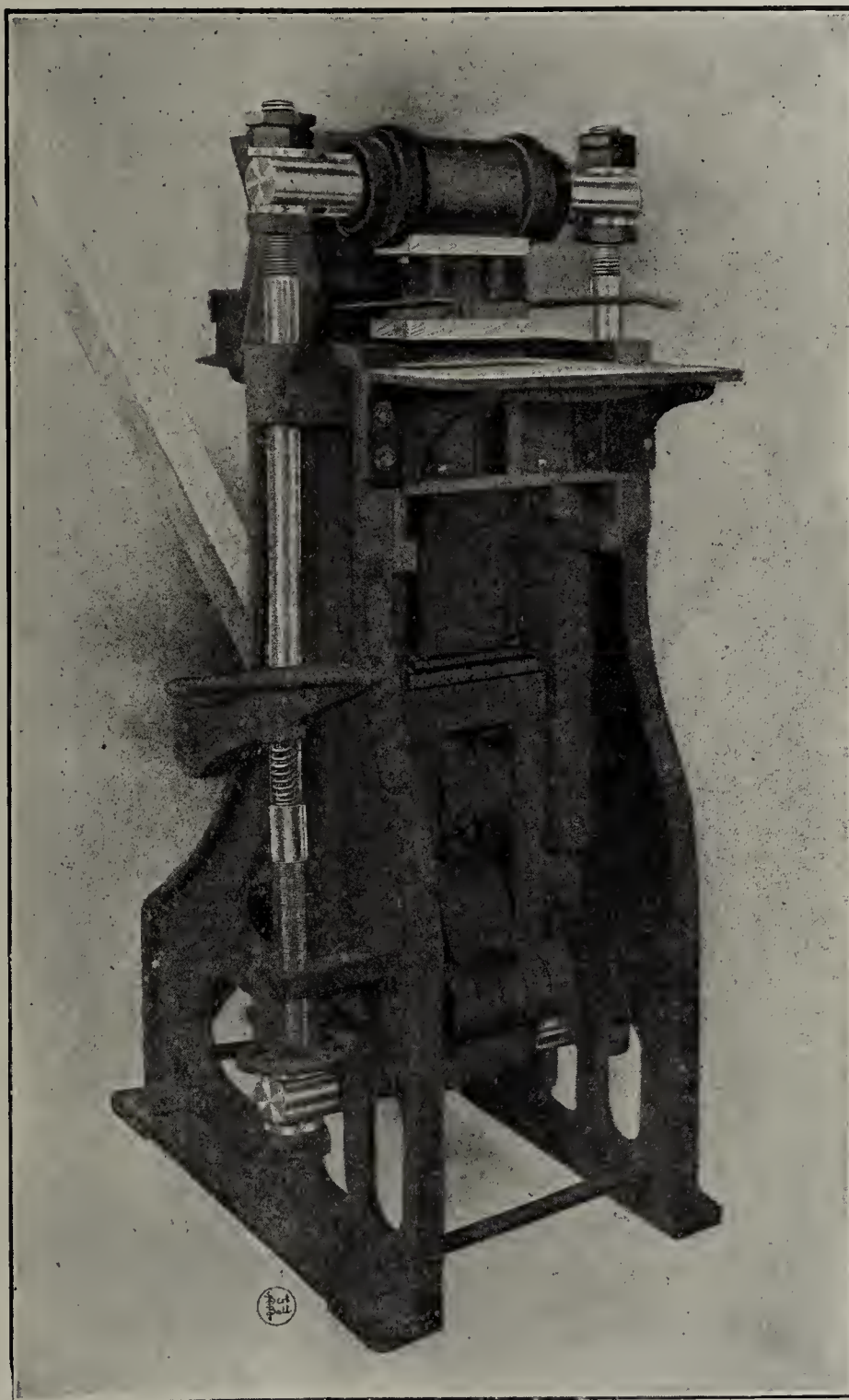
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FOR
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FOR
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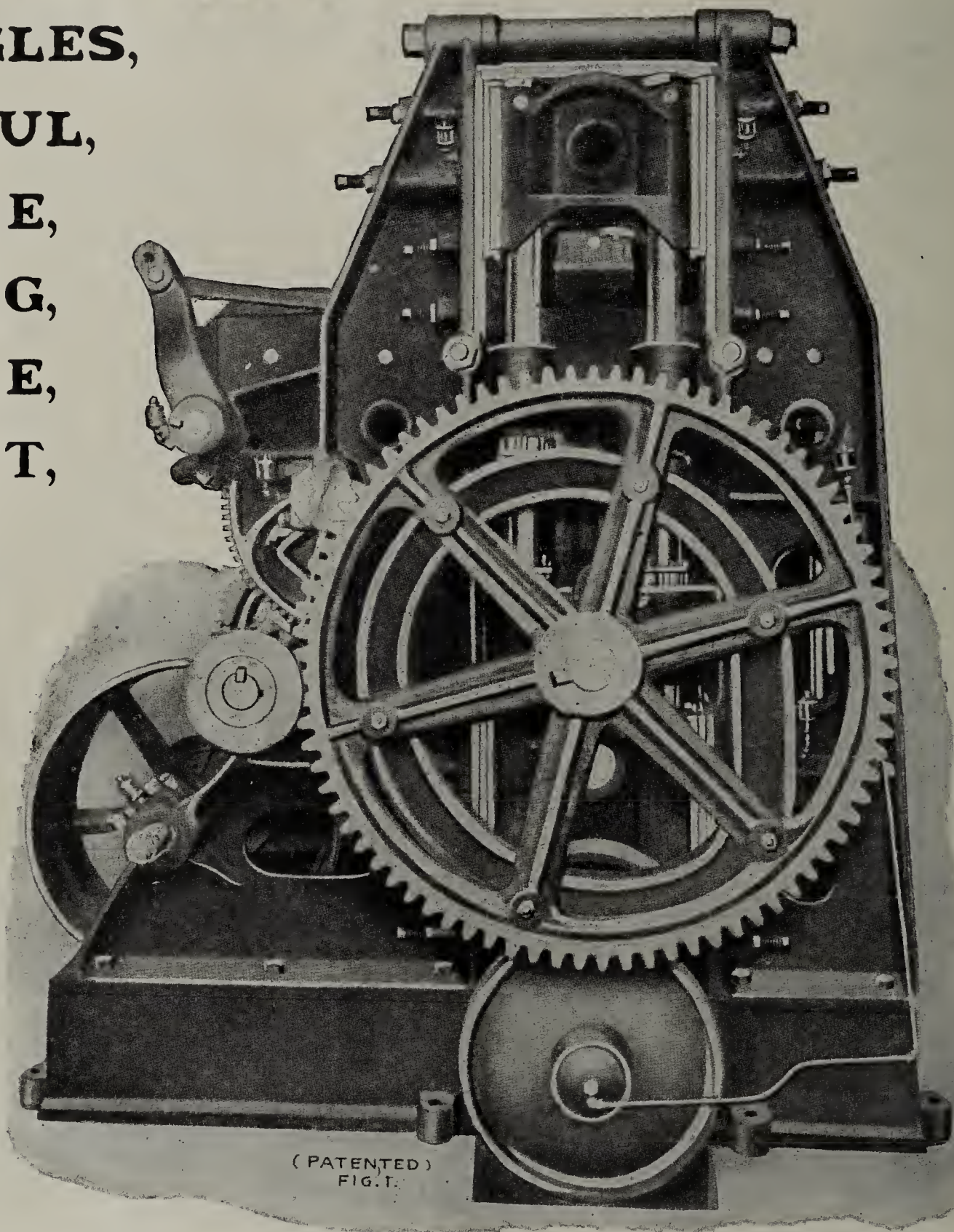
This Hand Press makes Brick equal in density to those made on a power press. Every Brick *PERFECT*. Extensively used for ornamental and special design.

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We Design and Equip Dry Press Brick Plants Complete
WRITE TO-DAY FOR PARTICULARS. ⚡ ⚡ ⚡ SEND US A SAMPLE OF YOUR CLAY.

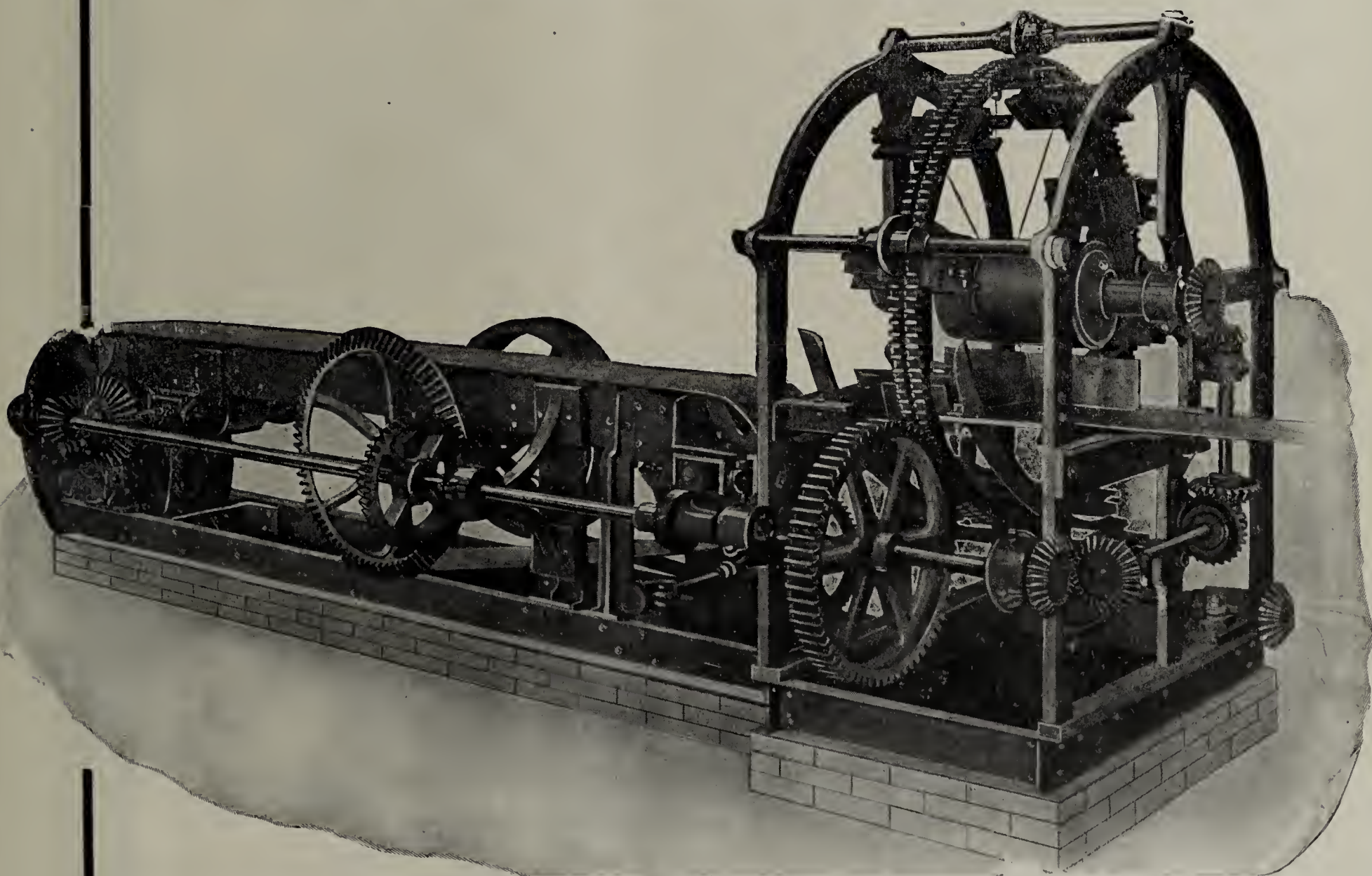
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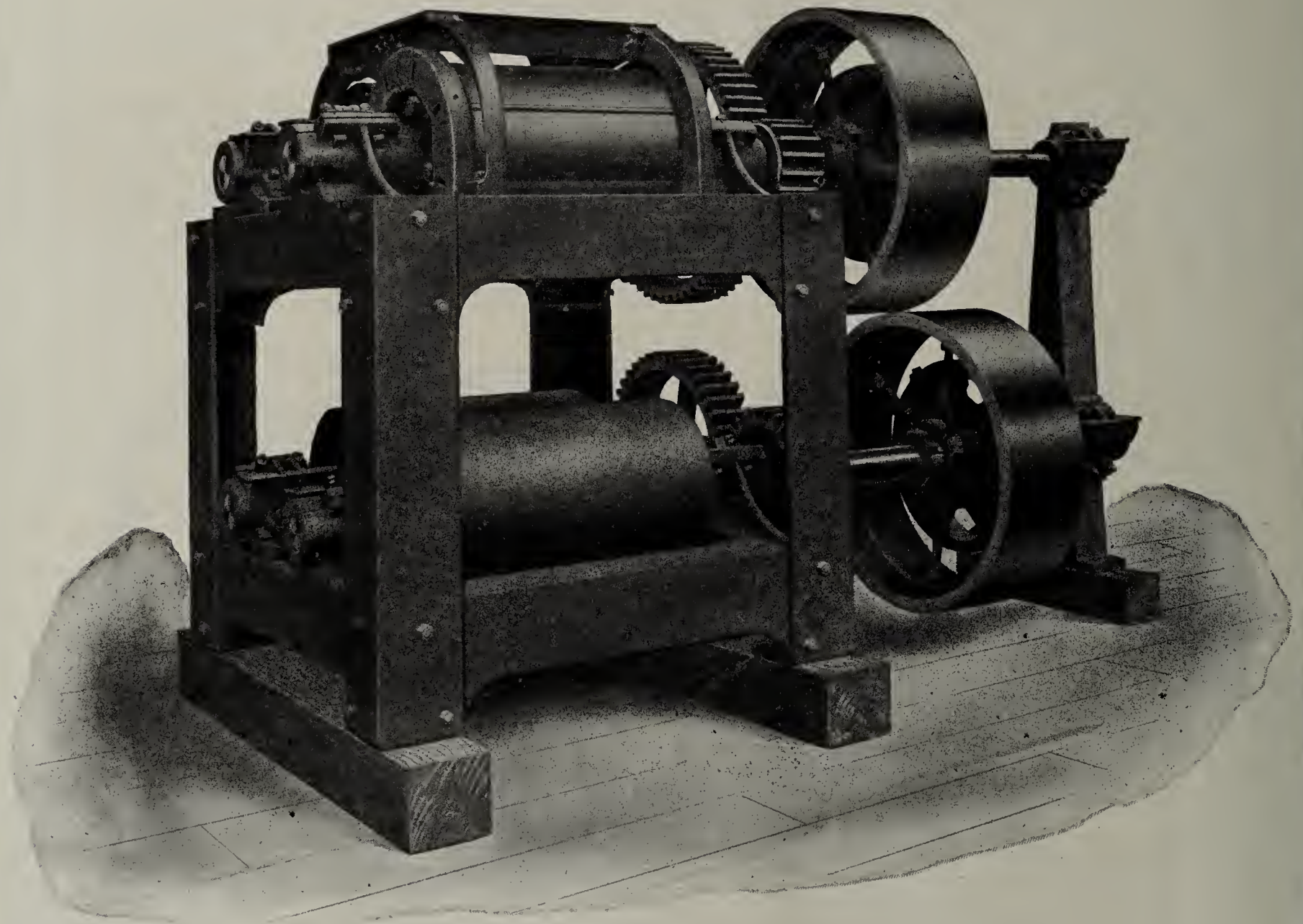


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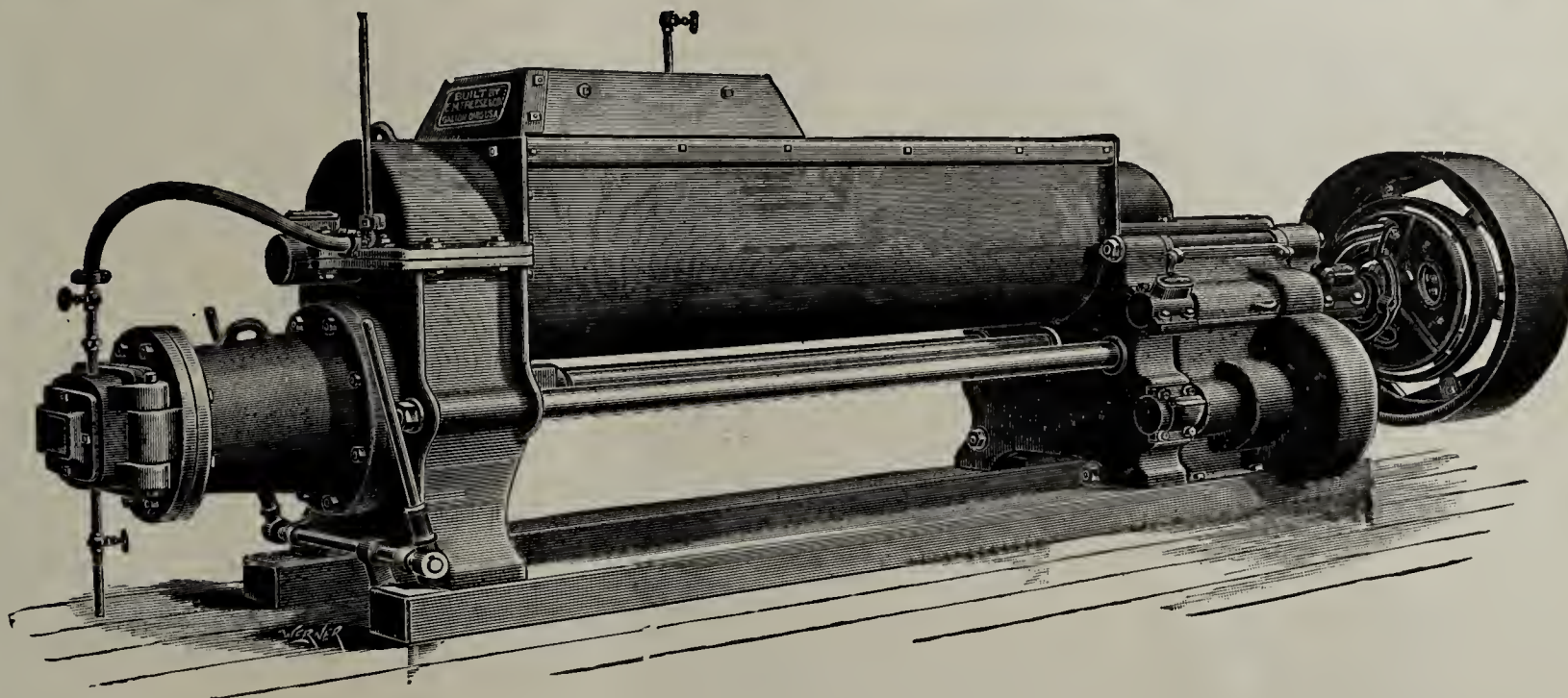
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is a machine of decided merit. It weighs 14000 pounds; frames cast in one piece; white-iron removable roll-shells, including disintegrating roll; journals divided diagonally to throw the strain into the boxes; upper rolls 20 in. diameter, 24 in. face; lower rolls 20 in. diameter 30 in. face.

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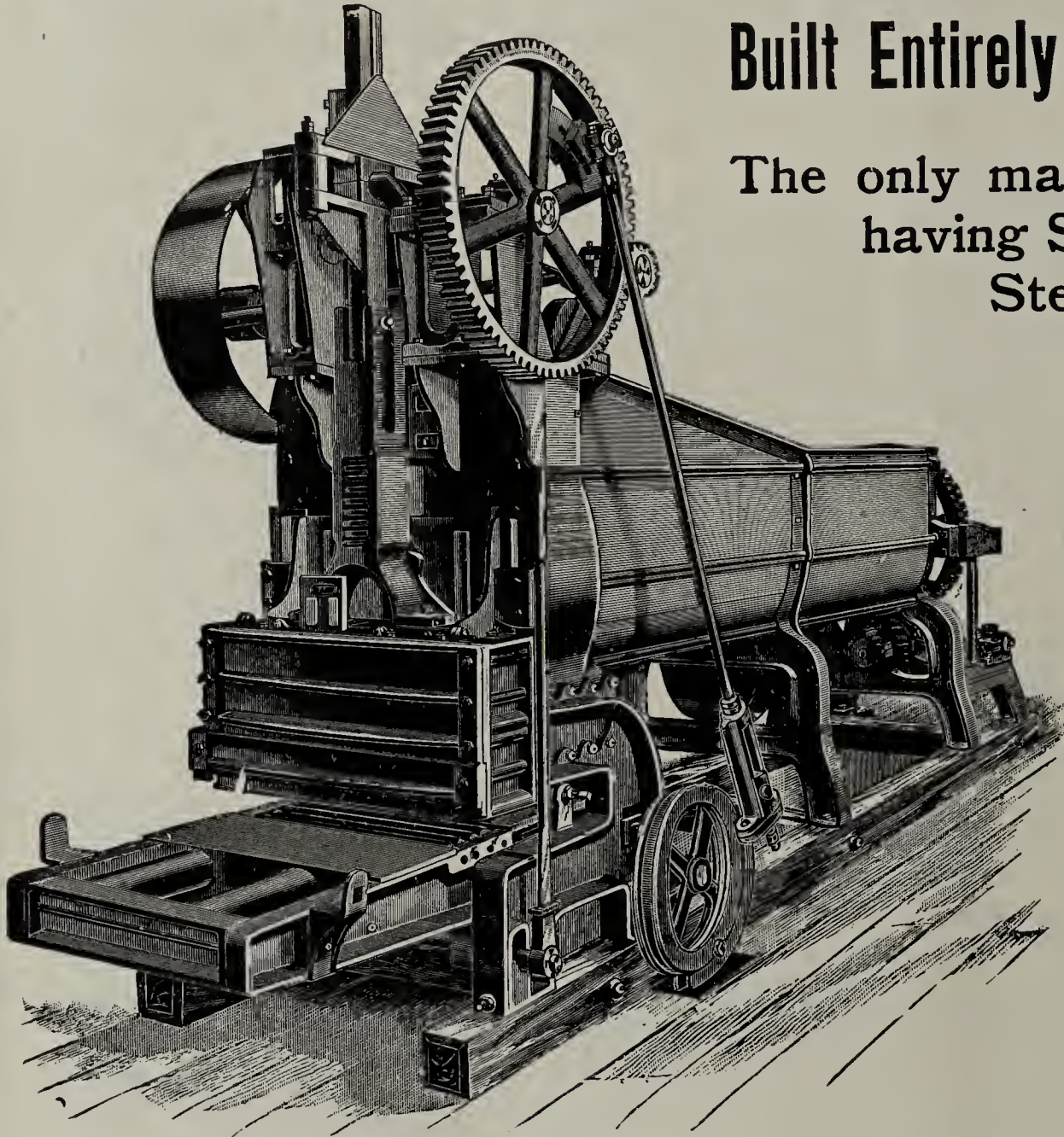
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Built Entirely of Iron and Steel.

The only machine of this class
having Steel Gear and
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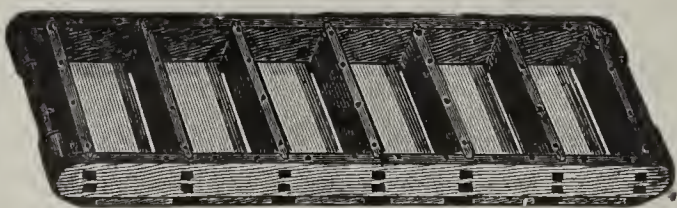


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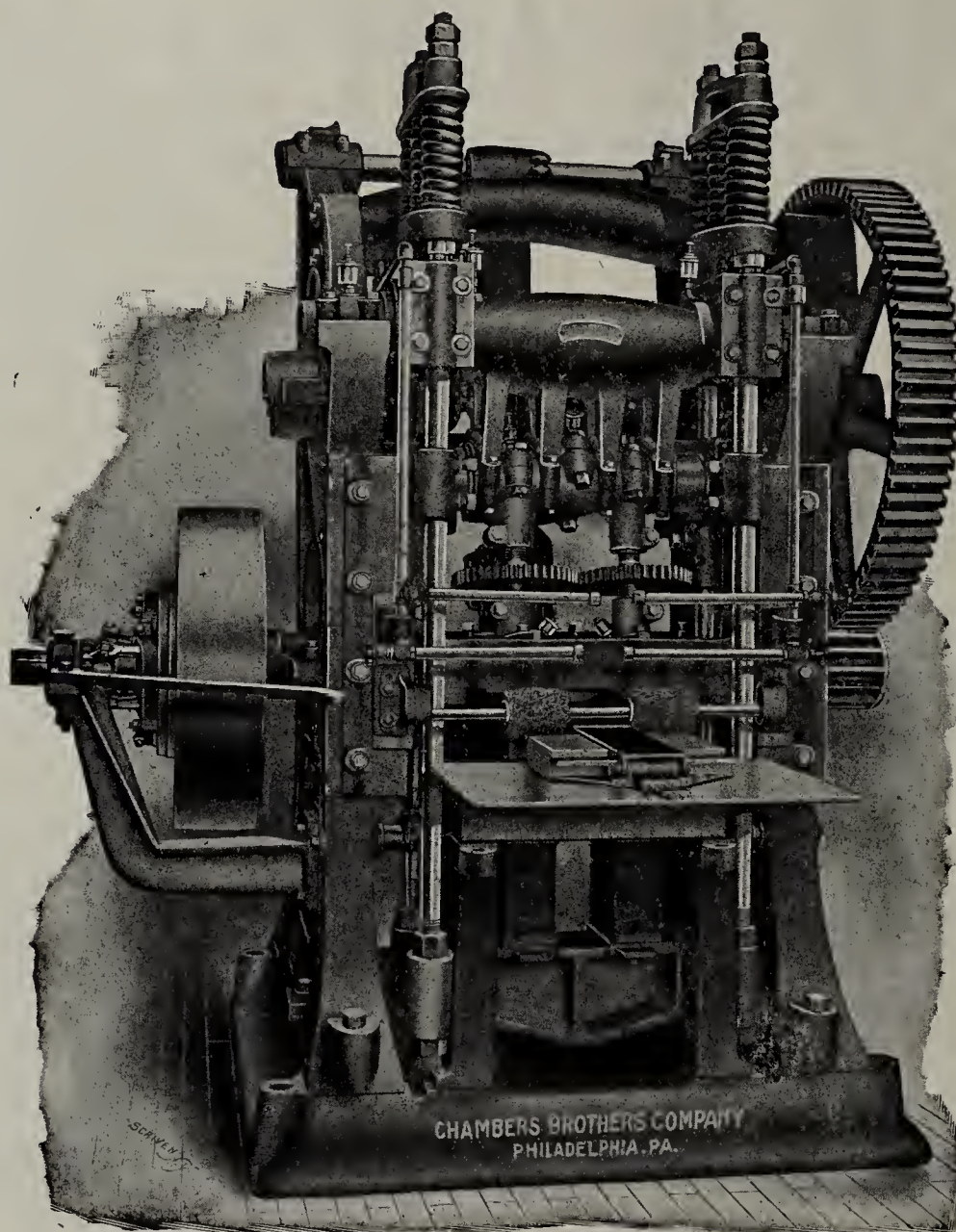
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Weight
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Single Crank
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Automatic End Cut Brick Machines of five sizes, having capacity
 from 10,000 to over 100,00 brick daily under
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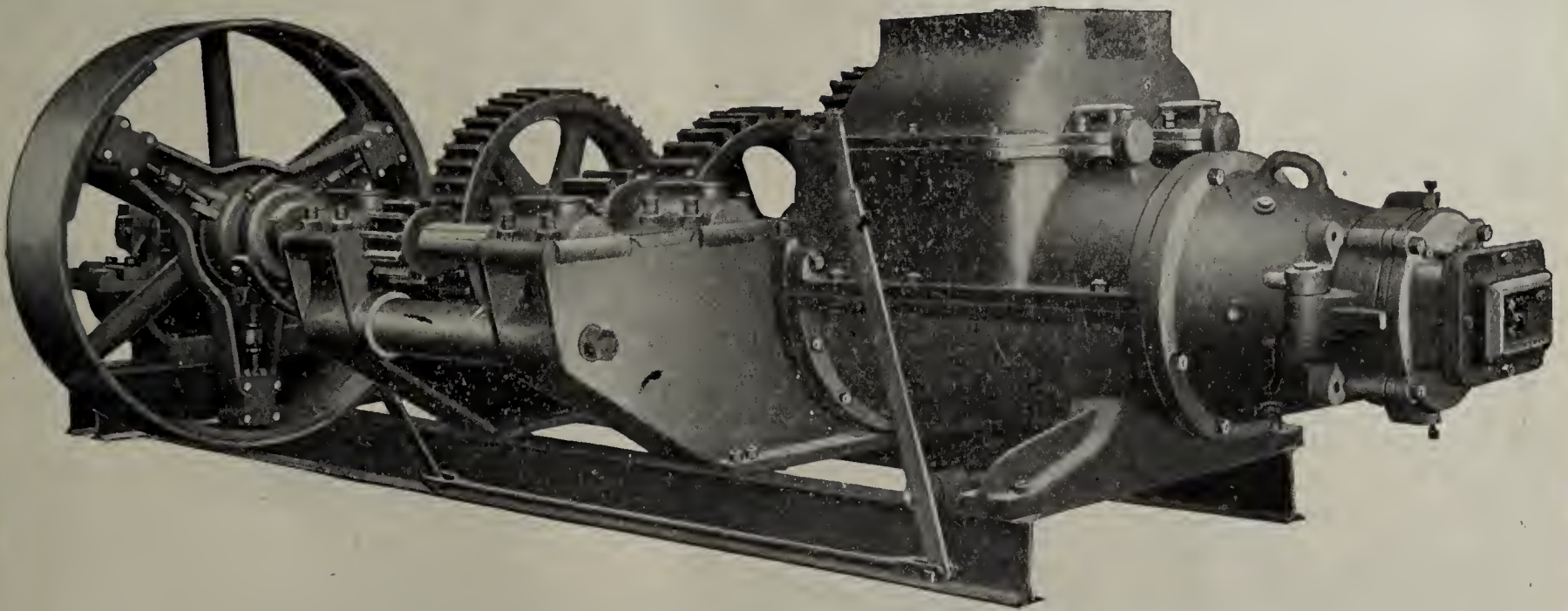
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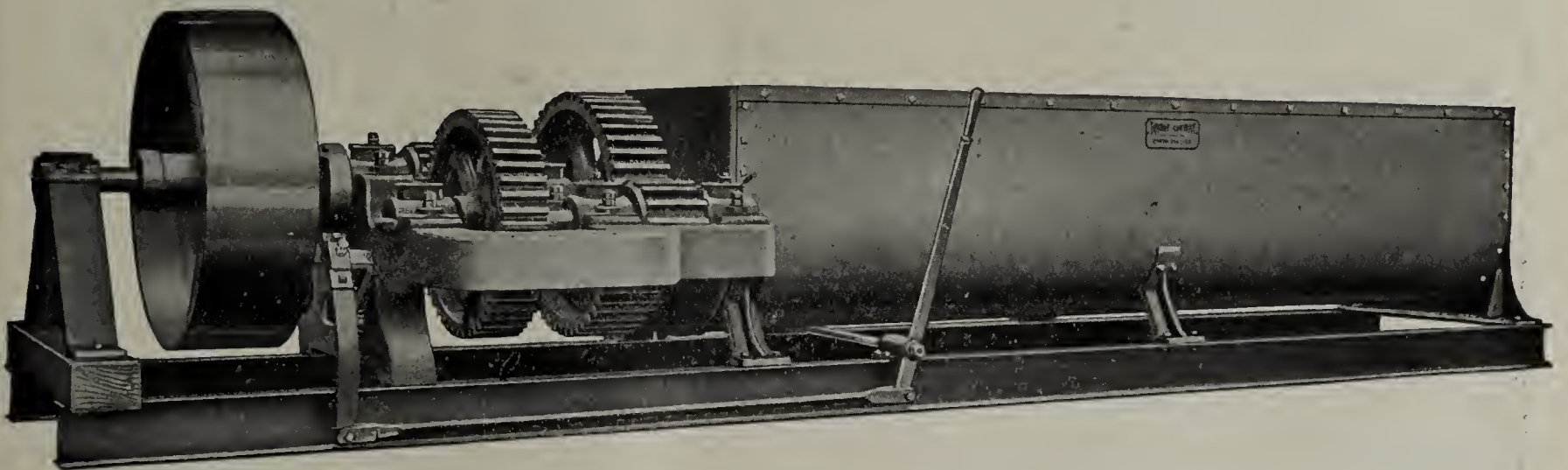
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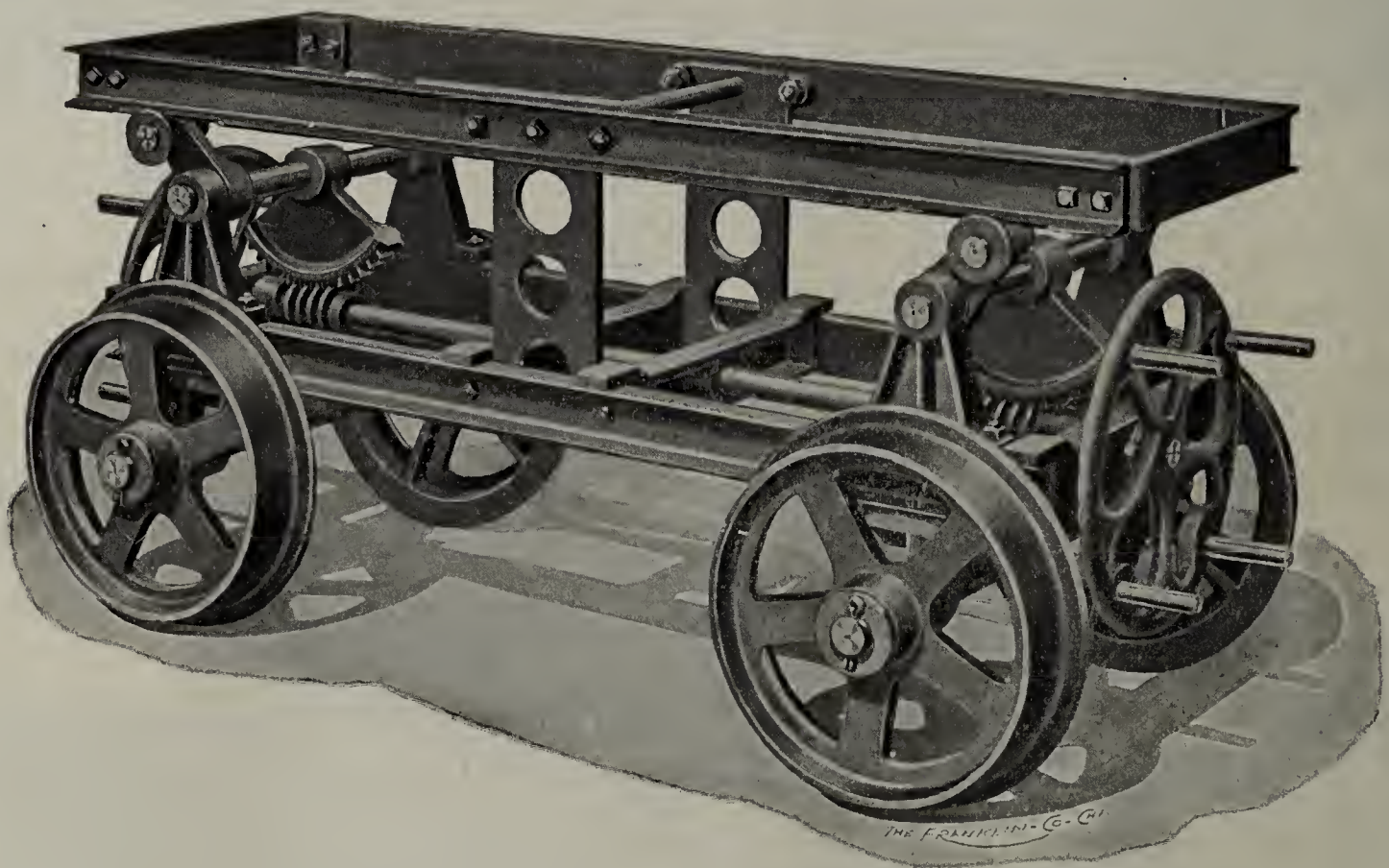
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CLAY RECORD

Vol. XXX. No. II.

CHICAGO, JUNE 15, 1907.

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Single Copies, 10 Cent.

Paper read before the Twenty-first Annual Convention of the National Brick Manufacturers' Association, held at St. Louis, Mo., Feb. 7, 1907.

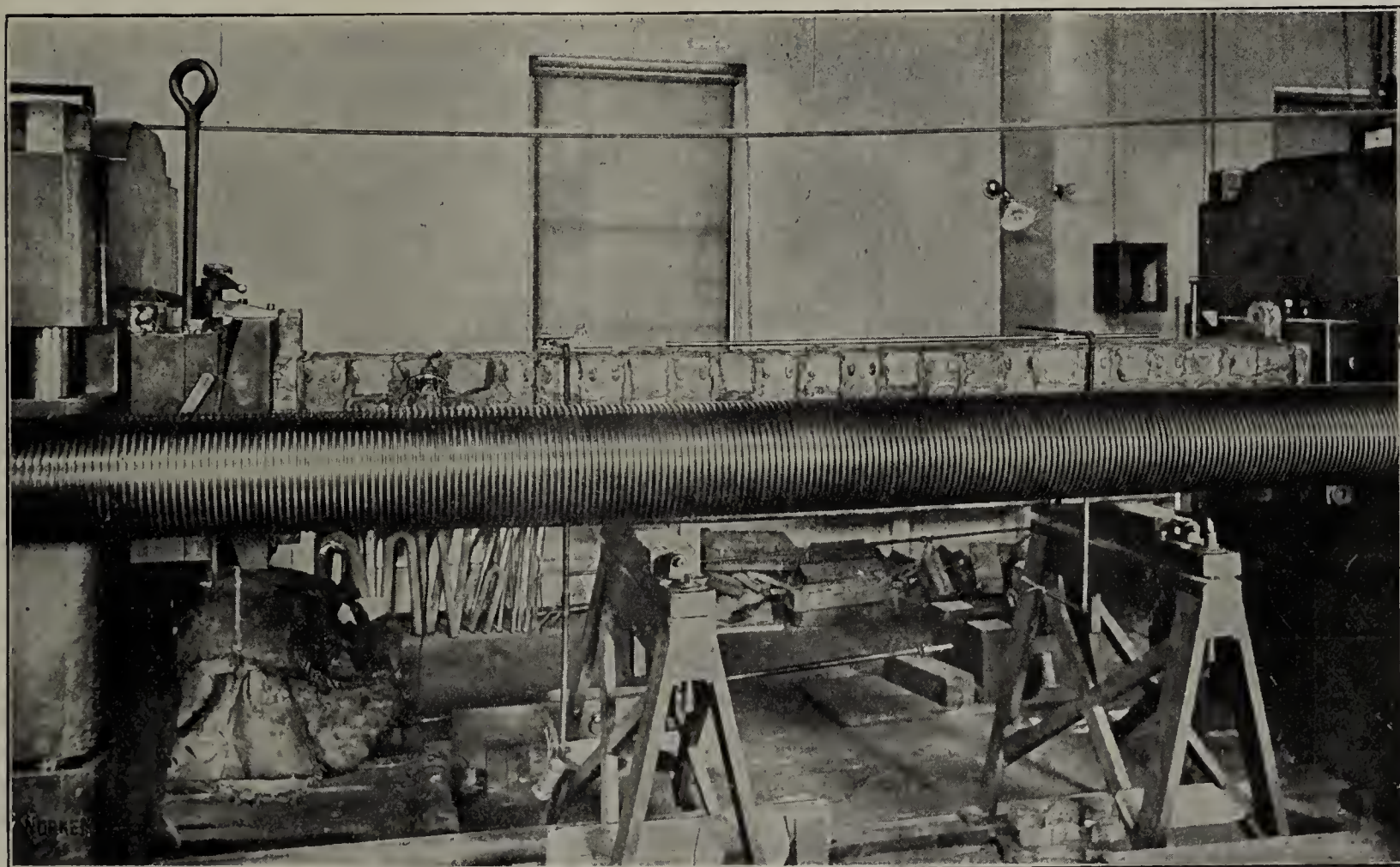
STRENGTH OF BRICK AND BRICK PIERS

BY JAMES E. HOWARD, WATERTOWN ARSENAL, MASS.

The results of tests of brick and brick piers, which I have the honor to here present, are selected from those which have been made in the testing laboratory at the Watertown Arsenal.

From these reports, and from current tests which will appear in subsequent volumes, certain results have been brought together, results which are thought to be representative of their respective kinds of materials, as qualified by the explanatory remarks relating to them.

Bricks are possessed of those physical properties which are common to other materials of construction. That is, they have strength to sustain loads, elastic properties where-



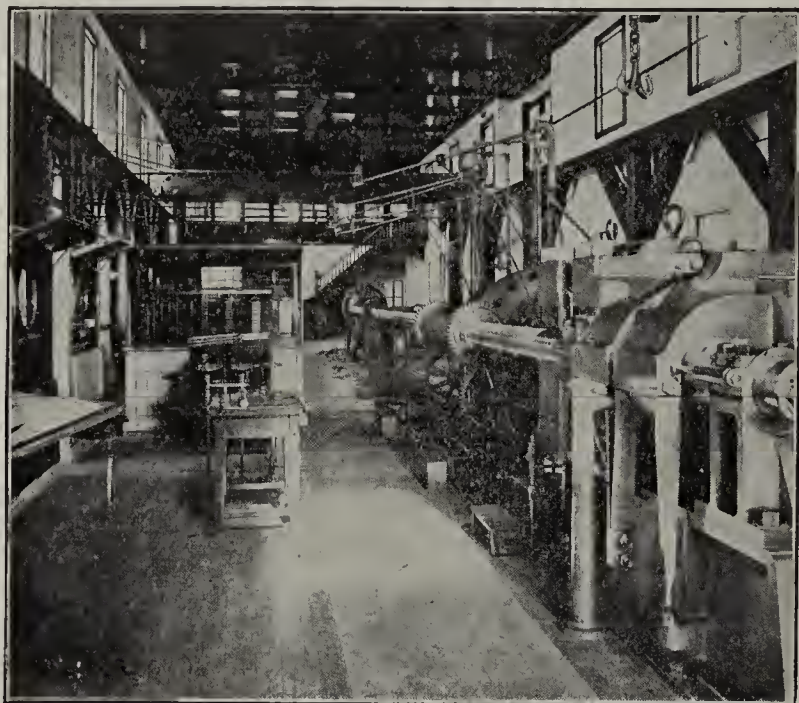
A Brick Pier in the Testing Machine, with Micrometer for Measuring Compressions in Place on the Upper Side—
Watertown Arsenal Testing Laboratory

In this laboratory various kinds of construction materials are tested, the results of which are published annually by the Ordnance Department, United States Army, in reports entitled "Tests of Metals and Other Materials for Industrial Purposes," congressional documents for public distribution. Twenty-five volumes have thus far been published.

by their dimensions are slightly changed during the period of loading, springing back to their original shapes, or nearly so, when the loads are removed; they expand and contract with changes of temperature, and it appears that their volumes are slightly affected when saturated with water, swelling minutely but perceptibly when wet.

Properties inherent in individual bricks are reproduced

in piers constructed therefrom, modified, however, by the properties of the mortar in which the bricks are laid, and mortars vary according to their composition and age. In general, the properties of constructive materials are found to present many variable elements, some of which are under control and some are not.

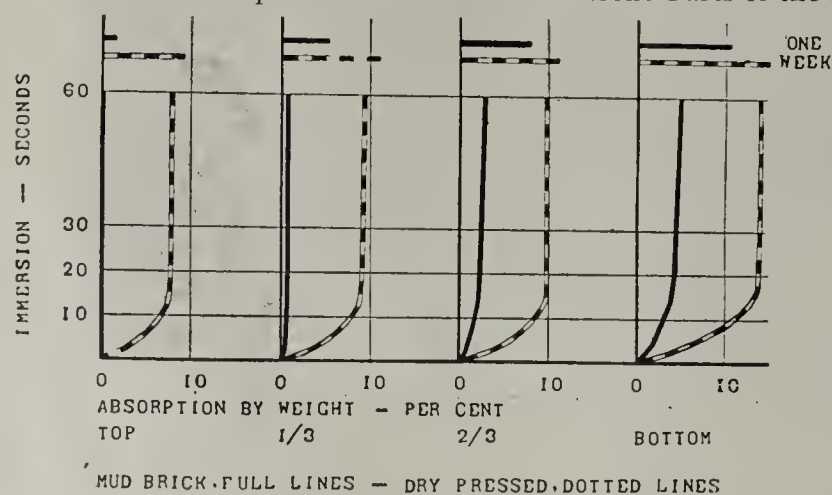


Main Room of The Watertown Arsenal Testing Laboratory,
800,000 lbs, Emery Testing Machine

Passing at once to the subject of individual brick, values for the co-efficient of expansion by heat have been observed over a range from .0000020 to .0000074 per unit of length per degree Fahrenheit. An ordinary value would be in the vicinity of 30 to 40 ten-millionths, that is, somewhat less than steel, which has a value a little above .0000060.

In making these determinations the brick were heated in water baths, basing the value of the co-efficients upon the contractions displayed in passing from the bath of boiling water to one at about freezing temperature. It was necessary to use the measurements taken on falling temperatures to eliminate the effect of the swelling of the brick due to absorption of water.

No. 1. Rate of Absorption. Brick from Different Parts of the Kiln

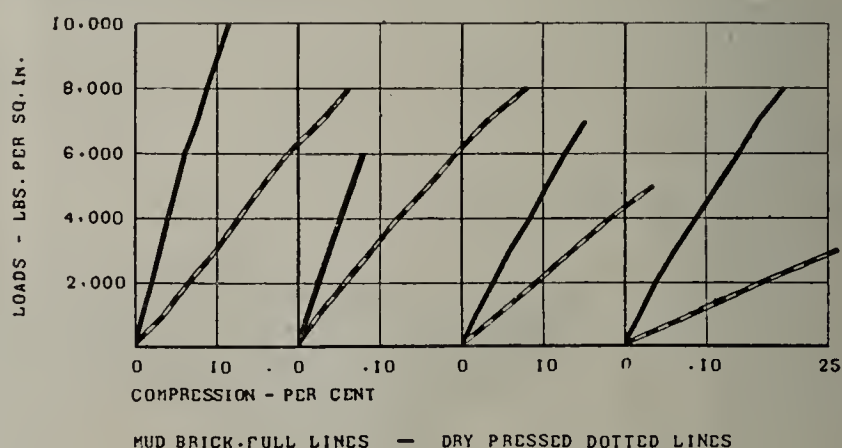


The brick usually swelled and were longer on the gauged lengths when in water at 33 degrees Fahrenheit than originally, when dry and in the air at 68 degrees. Moreover, after having been through the hot water bath and returned to the cold one, their lengths were found still further increased.

When a brick, saturated with water, is frozen, it expands, due to the action of the water therein. The amount of such expansion in going from 33 degrees Fahrenheit down to say 25 degrees, measured on a length of six inches, has been found to range from a few ten-thousandths of an inch to above one-half a hundredth of an inch. Not infrequently, freezing a brick saturated with water is attended with a permanent increase in its length.

The elastic properties of brick have been observed, measuring the compressibility of the material as loads are applied and determining the permanent sets, when such have been acquired. Light hard and salmon brick are most compressible, hard burnt and vitrified brick least compressible.

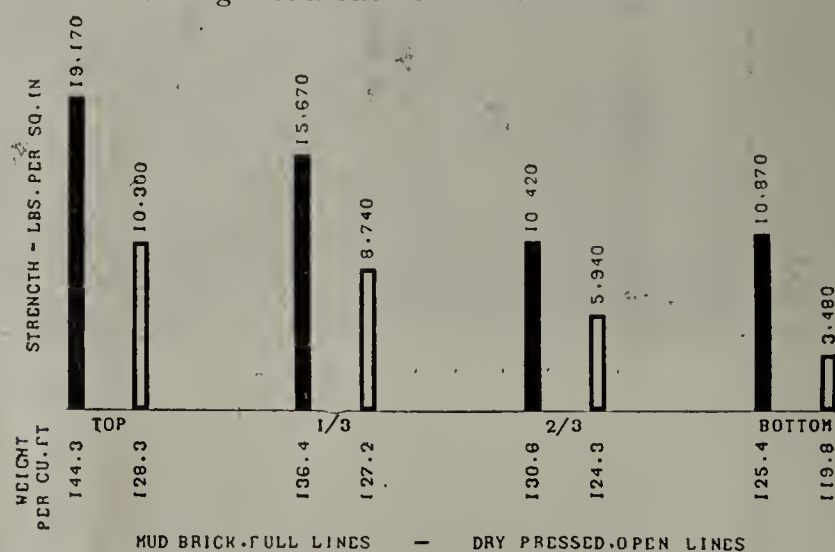
No. 2. Brick from Different Parts of Kiln. Stress-Strain Curves



The moduli of elasticity, deducting the permanent sets in computing these values, range from less than 1,000,000 to a maximum of 10,000,000 pounds per square inch. Permanent sets, when they occur, are usually of small magnitude. From this it follows that the curves of compressibility are nearly straight lines; that is, in individual cases the amount of compression of a brick is nearly proportional to the load which is placed upon it.

The compression of the brick, in the direction in which the load is applied, is accompanied by an expansion in a lateral direction which, as well as the direct compression, is a measurable quantity. The usual ratio of lateral expansion to longitudinal compression falls between the limits of one-fifth and one-tenth.

No. 3. Strength of Brick from Different Parts of the Kiln



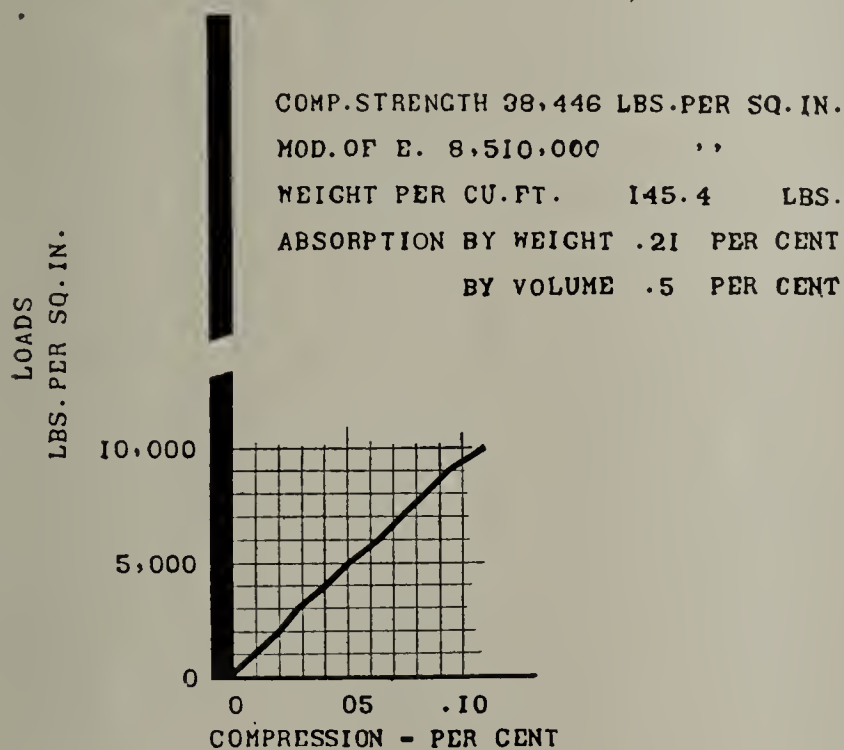
Density of structure is shown by the amount of water which a brick will absorb. Usually the absorption is reported in percentage, by weight. A better method seems to be to judge of the voids by the volume of water ab-

sorbed. Water enters a porous brick very promptly, less rapidly in the harder ones, but complete saturation is not accomplished even at the end of a week's immersion. Additional water is absorbed by exposure in a bath of hot water.

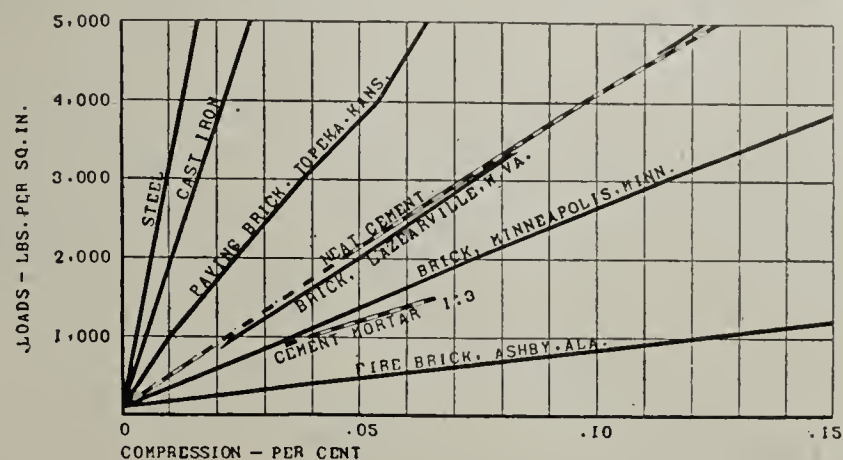
The compressive strength of brick extends over a wide range in values. The weight per cubic foot of the material, its density of structure, modulus of elasticity and compressive strength are mutually dependent features, and all are influenced more or less by the conditions of manufac-

intervals during the early stages of immersion. It appears that a considerable part of the water eventually absorbed entered some of the samples during the first fifteen seconds of immersion. After this time absorption went on slowly. The upper horizontal lines indicate the amounts which were absorbed at the expiration of a week's time. The lesser amounts of water absorbed by the brick from the top of the kiln over those farther down will be noted.

No. 4. Vitrified Brick—St. Louis, Mo.



No. 6. Steel, Cast-Iron, Brick and Cement Stress-Strain Curves

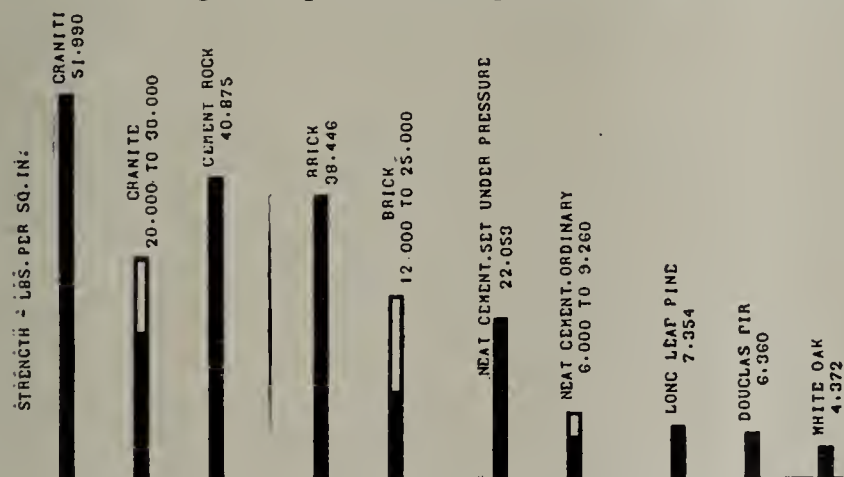


No. 2.—On this diagram are shown the stress-strain curves of the samples of the preceding slide. The greatest degree of rigidity is displayed by those from the top of the kiln becoming more compressible as they are taken from the lower parts. The order in which these curves are plotted is the same as in the preceding slide, with reference to their position in the kiln. It will be noticed that the mud bricks from the bottom of the kiln displayed as much compressibility under a load of 4,000 pounds as the corresponding brick from the top displayed under twice the load.

No. 3.—The variation in compressive strength is equally pronounced, according to position in the kiln, as shown by the diagram now upon the screen. The weights per cubic foot of the material are entered along the lower edge of the diagram. The highest strength corresponds with the greatest weight. This is characteristic, also, of other materials of construction, high resistance and high density of structure being found in the same samples.

ture. The records of tests on compressive strength are numerous and generally available to all. Reports of tests of metals, 1894, and following years, contain many such results. Nearly 500 State, Territorial and other libraries are designated depositories for congressional documents, where these volumes may be examined by those who do not have them personally.

No. 6. Some High Compressive Strengths in Constructive Materials

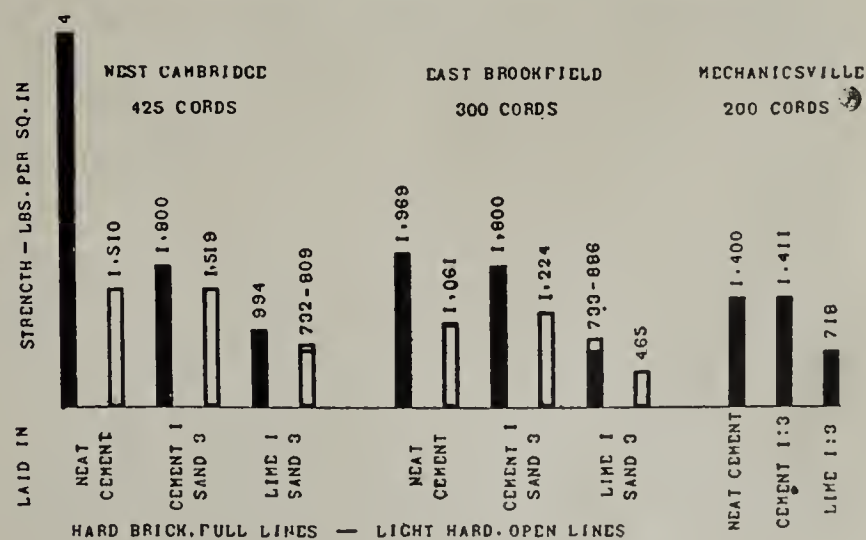


A number of lantern slides have been prepared to illustrate features connected with the properties of brick, brick piers and other materials of construction, which will now be thrown upon the screen.

No. 1.—The rate of absorption of some dry pressed and mud brick, which were burned side by side in a down draft kiln, is here shown.

The mud brick are shown by full lines, the dry pressed by dotted ones. These samples were weighed at frequent

No. 7. Strength of Brick Piers Under Different Conditions



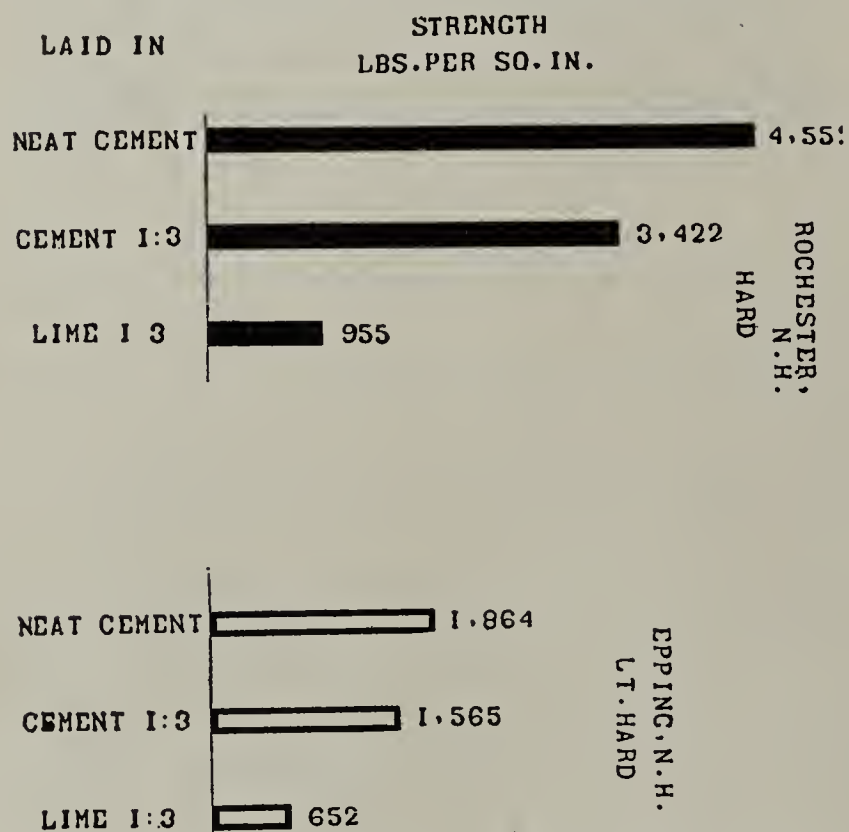
No. 4.—The properties of a remarkable brick are shown on this diagram. So phenomenal was its compressive strength that it is fully deserving of a special diagram of its own. To St. Louis belongs the honor of producing this

CLAY RECORD.

brick, which far exceeded in strength any brick heretofore tested at Watertown Arsenal. This sample was tested on end, and reached a total load of 376,000 pounds on a surface of 2.45 inches by 3.99 inches in cross section dimensions. Fragments of this brick have been brought here for inspection, and are held in great respect.

No. 5.—The laboratory records were gone over, and from them were selected the results which appear on the diagram now on the screen. These tests represent the highest of their respective classes. They are what have been attained, and are presented as standards of excellence. The granite of 51,990 pounds per square inch compressive strength came from a quarry in Asheville, N. C. Ordinary granites range from 20,000 to 30,000 pounds per square inch. The cement rock represents the stone from which a natural cement is obtained from New York State. The brick of 38,446 pounds strength has just been described. Ordinary values for hard burnt brick range from 12,000 to 25,000 pounds per square inch.

No. 8. Brick Piers—Water-Struck Brick



Portland cement, set under pressure, attained the maximum strength yet observed. This sample was exposed to an initial pressure of 14,000 pounds per square inch while setting. The strength stated on the diagram was displayed by the cement at the age of fifty-seven days. The strength of ordinary Portland cement, tested neat, ranges from 6,000 to 9,260 pounds per square inch.

The strength of the white oak stick seems low taken in comparison with the strength of the long leaf pine and the Douglas fir wood. In small pieces white oak has shown a compressive strength of 9,000 pounds per square inch. The figures here given refer to a post of commercial size.

No. 6.—The stress-strain curves of several representative materials are shown on this slide. Steel and cast iron are here plotted for reference purposes. A paving brick from Topeka, Kan., occupies a position next to the cast iron and steel. Then follows the curves of neat Portland cement, a brick from Lazearville, W. Va.; then a brick from Minneapolis, Minn., and the curve of a cement mortar of one part

Portland cement and three parts sand, and at the lower part of the diagram appears the curve of a fire brick from Ashby, Ala. This diagram shows the range in compressibility which may be met with ordinarily. The number of curves might be extended, but other grades of material would occupy places between the curves of the paving brick and the fire brick.

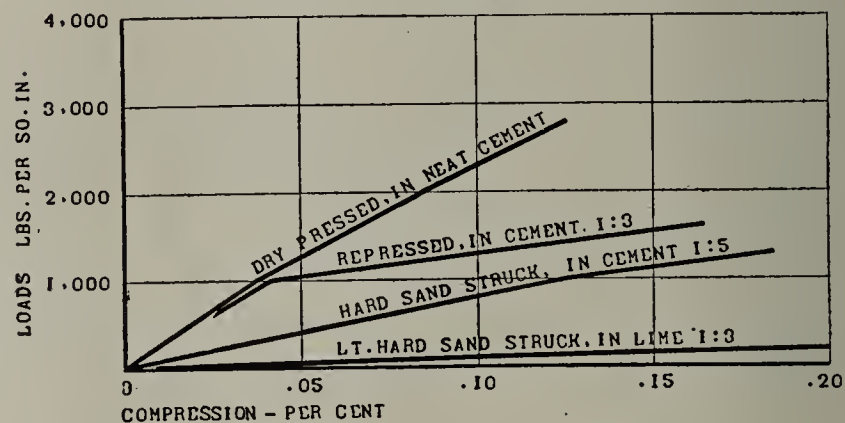
No. 7.—The strength of brick piers will now be referred to. The diagram on the screen shows the results with piers made of hard and light hard sand struck brick laid in different kinds of mortar. Brick from three yards are represented, the amount of fuel used being 425 cords, 300 cords and 200 cords respectively per million brick. One grade only was received from the yard where the smallest quantity of fuel was used, which was classified as hard.

The range in strength from the hardest brick, laid in neat cement, to the weakest light hard brick, laid in lime mortar, is seen to be very great. In respect to the compressibility of the piers under loads, the difference is greater than shown by their ultimate strengths. It is desirable to use neat cement or a strong mortar in laying hard brick, in order to attain maximum strength and rigidity. Rigidity is regarded as an important factor in construction as well as strength.

Lime mortar should not be used when either of the considerations just mentioned are essential.

Two values are shown for two of the piers. The brick from these yards were panelled on one side, and the higher strength in each of these piers belongs to duplicates in which the panels were filled with neat cement before laying.

No. 9. Brick Piers—Stress-Strain Curves

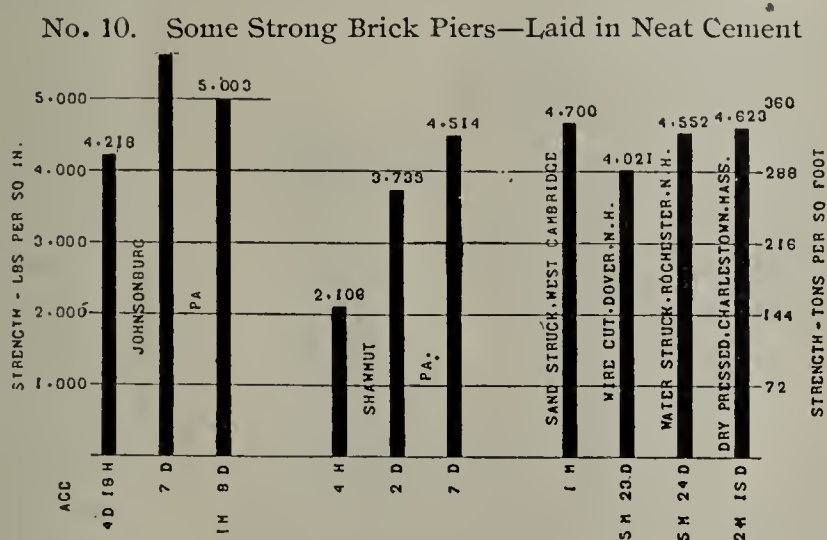


No. 8.—Some piers made of water struck brick appear on the diagram now before you. One yard furnished the hard, another the light hard brick. The influence of the mortar on the ultimate strength of the pier is again well shown. It seems a wasteful effort to use a weak mortar in which to lay a pier of hard, strong brick.

No. 9.—The curves of compressibility of some piers are now shown on the screen. An earlier stress-strain diagram showed corresponding results on individual brick and other materials. On the present diagram the most rigid condition pertained to the pier made of dry pressed brick, laid in neat cement. A pair of repressed mud brick appears next in the order of relative rigidity, then a hard sand struck brick pier laid in less rich mortar than used for the repressed brick, and most compressible of the group is the pier of light hard brick which was laid in lime mortar. The characteristics of these piers depend chiefly upon the quality of the mortar employed.

From this exhibit it may be seen how unfavorable is the action in a wall, the face of which may be laid with one class of work, while the backing is of another.

No. 10.—In order to illustrate the strength which may readily be attained in brick pier construction, the results of some strong piers have been brought together on the diagram now presented. The four piers represented on the right of the screen are taken from earlier tests, the results of which are among the published records of the laboratory. The other six represent piers built and tested just prior to the time of this convention. These latter ones were intended to be strong piers, a result which was realized in the tests. They were about eight feet in height each, nominally twelve inches square; they had hollow cores, and the brick were laid on edge in neat cement.



The ages of the piers are entered along the lower edge of the diagram. One pier, the youngest of the series, was tested the day it was laid. The test began about an hour after the last brick was in place and was finished three hours later, or when the pier was four hours old. It developed a compressive strength of 2,100 pounds per square inch. The mortar had not hardened, and unusual compressibility was displayed. The total load on the pier reached 118 tons, a load far in excess of any which could be expected to be placed upon it in constructive work, at so early an age.

Horizontal lines represent pounds per square inch on the left of the diagram, and on the right side, tons per square foot. One pier reached a strength of 360 tons per square foot, another exceeded this load. The allowable load prescribed by the building laws of some cities, fifteen to thirty tons per square foot, seems a very low limit in the presence of piers possessing the ultimate strength which these displayed.

No. 11.—The stress-strain curves of one brick pier, two mortar columns and two wooden posts are shown on the diagram now placed upon the screen. These curves stand for strong examples of their respective kinds. These illustrations and others which have gone before were selected, in many of the cases, to indicate what seems best in constructive materials. Examples which could safely be followed where strong and safe construction is needed.

No. 12.—A few slides will be introduced pertaining to the testing laboratory, the methods of testing and types of fractures common to piers. A partial view of the main testing room is here shown. The large emery testing machine is the principal figure of the illustration. On this machine all the full-sized tests of columns and piers are made. The machine has a capacity of 800,000 pounds, and columns upwards of 25 feet in height may be accommodated.

No. 13.—This slide shows a brick in position in the testing machine, on which a micrometer is mounted. The

brick is loaded on end in order to obtain a gauged length ample for the determination of its elastic properties. The compression readings are taken by means of the arc and pointer on the micrometer. Using the micrometer on the flat side of the brick, in a cross-wise direction, enables the lateral expansion of the material to be ascertained.

No. 14.—Some columns and piers prepared for testing are shown by the photograph now on the screen. It happened that a larger number of concrete columns were in readiness for testing at the time this photograph was taken, than brick piers.

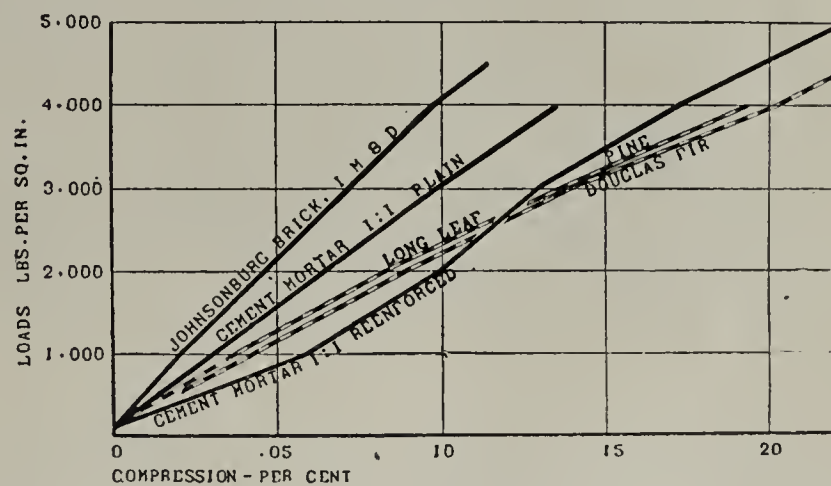
No. 15.—A brick pier is here shown in position in the testing machine. The pier is tested to a horizontal position. End plates with side rods are used to put the material in compression, to a limited degree, during transportation to the machine and adjustment therein. The load, necessary for this purpose, is less than 100 pounds per square inch. The usual gauged length is 50 inches, on which the compressive movements are observed. The micrometer is shown in place on the pier.

The compressions are observed for increments of 50 or 100 pounds per square inch under advancing and permanent sets determined after each increment, proceeding in this manner until the ultimate resistance of the pier is approached. The progressive development of longitudinal cracks and the increasing frequency of snapping sounds give warning of close approach to the breaking load.

No. 16.—One of the lines of fracture of a pier, after having passed the period of ultimate resistance, is shown by the present slide. The half-bricks, into which the pier has been separated by a longitudinal crack, have buckled upward along a portion of its length.

No. 17.—On the present slide appears the photograph of a pier having a base 16 in. square, drawn in to 12 in. by 16 in. at the upper half. Lines of fracture will be seen in the base portion. It has been found that a pier, smaller in one dimension, resting upon a larger base does not display so high a strength as a pier of the smaller size having a uniform cross section throughout its length.

No. 11. Brick Pier, Cement Mortar and Wooden Columns
STRESS - STRAIN CURVES



No. 18.—The usual type of failure of a brick pier is shown on the present slide, the last of this series of views. Longitudinal cracks develop, separating the bricks into halves or smaller fragments, which cracks gradually extend over a considerable part of the length of the pier. The lines of fracture are chiefly transverse fractures of the individual brick. The yielding of the mortar promotes fractures of this kind. The use of a mortar having substantially the same rate of compressibility as the brick, regularity of shape of the individual brick, laying them on edge or laying several courses without breaking joints, each favors the transverse resistance of the brick and may be expected to favorably influence the ultimate strength of the pier.

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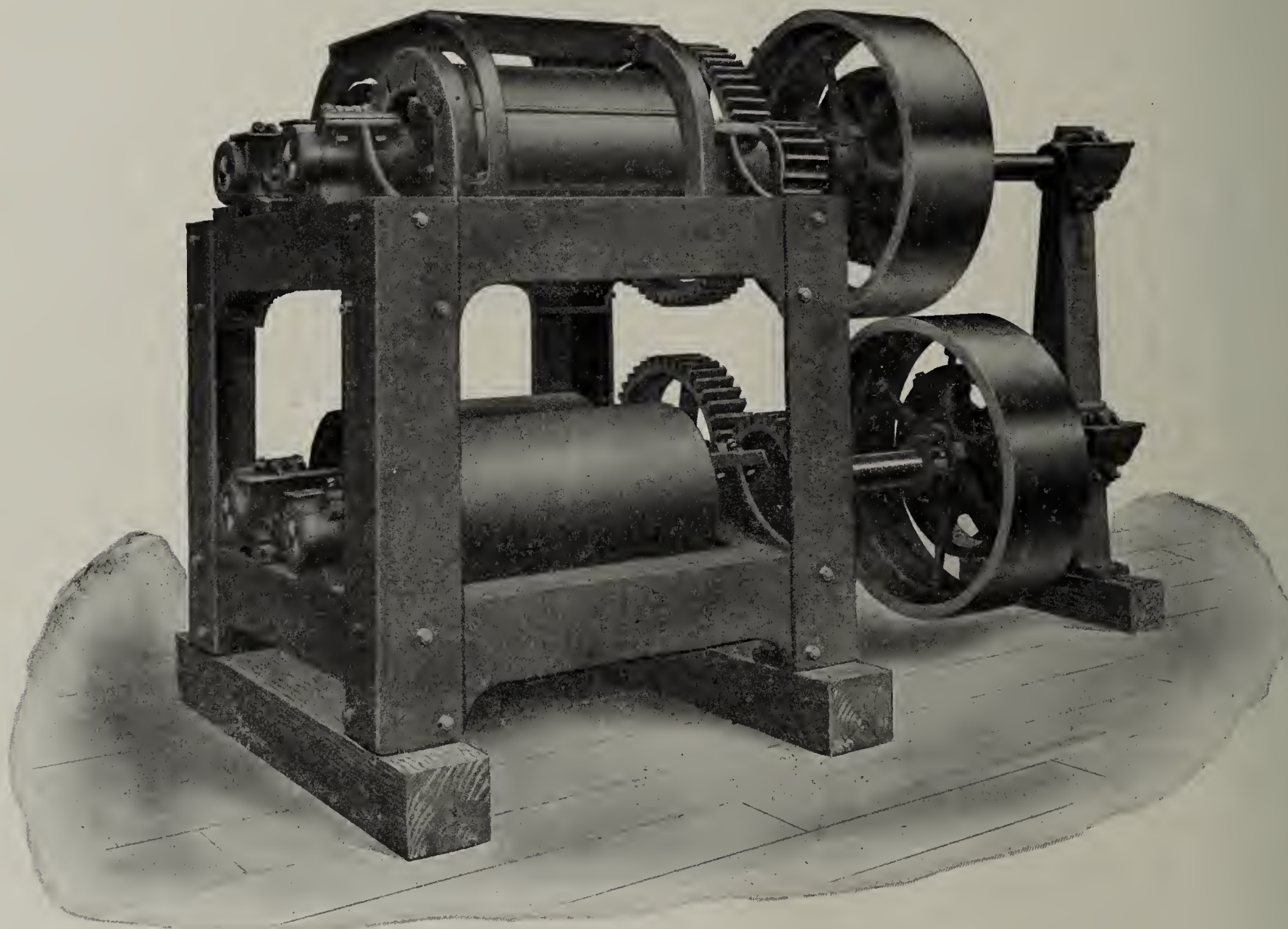
THE BREWER NO. 11 COMPOUND CRUSHER.

This machine consists of a disintegrator or stone separator and a crusher combined, the purpose being to increase capacity and to promote fineness of grinding in cases where neither machine alone would give satisfactory results.

The upper set of rolls is made up of one plain feed roll 20 in. diameter, 24 in. face, running at 90 revolutions per minute and either one disintegrating roll or one spirally beaded roll, depending upon the character of the clay to be handled. The disintegrating roll is 20 in. diameter, 24 in. face; is run at the rate of 300 revolutions per minute and is supplied with eight lateral, adjustable and removable steel cutting bars. The beaded roll is also 20 in.

of the machine is reduced to a minimum; and farther, the space between the two sets of rolls being clear from all four sides, it is an easy matter to remove any choke, which may by chance occur, without stopping the machine. Another point worthy of notice is the fact that any one roll may be removed without disturbing any other and without tearing down the machine.

The frames are heavy one-piece castings of the same outside dimensions, supported one above the other by upright steel angles and on account of this construction it is possible to install either machine alone to be followed later by the other or to separate the machines and operate them independently or abandon one of them entirely. The



THE BREWER NO. 11 CRUSHER

diameter, 24 in. face, run at the rate of 300 revolutions per minute and has running spirally around its outside surface a broken series of elevations or projections about $1\frac{1}{2}$ in. wide, 5 in. long and 3-16 in. high. The feed roll is adjustable for fineness of grinding by movement of its journals toward or from the disintegrating roll or beaded roll, whichever may be used, by means of regulating screws provided for the purpose. The lower pair of rolls are both straight face, 20 in. diameter, 30 in. long and are run at speeds of 195 and 325 revolutions per minute, respectively; one of them being adjustable for fineness of grinding.

Attention is directed to the fact that the lower rolls are of 6 in. wider face than the upper set, on account of which the liability of choke or clog between the two parts

dividing line of the journals on roll shafts is made on an angle of 45 degrees, thus throwing the thrust well into the boxes instead of at the point of division between box and cap.

The specifications are: Weight: 13,500 pounds. Floor Space: 4 ft. 8 in. x 9 ft. 5 in. Height: Over all, 5 ft. 8 in. Shafts: 4 in. diameter, steel. Gears: 5 in. face, $1\frac{3}{4}$ in. pitch. Journals: 12 in. long. Outboard Bearing: Double floor stand for both shafts. Driving Pulleys: Friction clutch, Type B, 36 in. diameter, 12 in. face. Speeds: 300 and 325 revolutions per minute. Capacity: 10,000 brick per hour.

The construction of the rolls can be taken up with H. Brewer & Co., Tecumseh, Mich.

EFFECT OF MOISTURE ON THE STRENGTH AND STIFFNESS OF WOOD*

Very little is definitely known about the influence of moisture on the strength of wood, even by those experienced in handling the material. Since the whole subject is one of great importance, the Forest Service has been making a thorough study of it during the past three years and is about to publish the results of its investigation in an exhaustive technical bulletin entitled, "Effect of Moisture Upon the Strength and Stiffness of Wood."

The chief points presented by the study are:

1. The relation of moisture to strength follows a definite law which can be graphically expressed. Proper drying very greatly increases the strength of all kinds of wood, the amount of increase in strength depending upon the species and the dryness. The increased strength given to green wood by thoroughly drying it, is so great that it will surprise many. For example, the strength of a piece of unseasoned red spruce may be increased over 400 per cent by a thorough drying at the temperature of boiling water. Strength decreases again, however, as the wood reabsorbs moisture. Air-dried wood, protected from the weather, and containing 12 per cent of moisture, is from 1.7 to 2.4 times stronger than when green, varying with the species. These conclusions, however, are drawn from small-sized pieces not exceeding 4 by 4 inches in cross-section such as are used in vehicle work, tools, etc. Large timbers require years of drying before the moisture is reduced to the point where strength begins to increase. It must also be taken into consideration that more or less checking always occurs when large timbers dry; and if this checking is excessive it may cause weakness to counterbalance, partially or entirely, the strength gained in drying. Consequently it is not safe to assume that the average strength of large, so-called seasoned timbers is much greater than that of green or wet ones.

2. The fiber saturation point of a number of species has been determined. This point, which varies with conditions and species of wood, designates the percentage of water which will saturate the fibers of the wood. It has been found that, under normal conditions, wood fiber will absorb a definite amount of moisture; beyond this the water simply fills the pores of the wood like honey in honey-comb. Only that water which permeates the wood fiber has an influence upon the setrength. For the following species, the saturation point occurs at the given percentage of moisture based on the dry weight of the wood:

	Per cent moisture.
Longleaf pine	25
Red spruce	31
Chestnut	25
Loblolly pine sapwood	24
Red gum	25
Red fir	23

*United States Department of Agriculture Bulletin, Forest Service.

White ash	20.5
Norway pine	30
Western tamarack	30

3. Prolonged soaking in cold water does not reduce the strength of green wood below that of its fiber saturation point, provided it remains in perfect condition. When wood has been dried and is resoaked, it becomes slightly weaker than when green.

4. Wood soaked in heated water absorbs more moisture because the amount of water which causes a reduction in for bending.

FIRING AND GLAZING DRAIN PIPES

The pipes are fired and glazed in circular or square down-draft kilns. They are placed one upon another, the small ones inside the larger, care being taken, however, that the whole surface of each pipe is exposed to, and can easily be attacked by, the gases which are produced at the end of the firing by the introduction of the salt. The action of the salt upon the pipe is principally the formation of a silicate of soda, which, being a glass, vitrifies the surface of the pipe. The salt is introduced into the kiln when the highest heat necessary for the firing of the clay has been attained. It is volatilised by the heat, and decomposes on coming into contact with the silica present in the body of the pipe. The richness of the glaze depends to a great extent upon the amount of silica in the clay. Bodies containing a large proportion of alumina do not glaze well.

The salt is dropped into the kiln through holes in the dome, which are so arranged that it does not fall directly on the ware. A large amount of heat is absorbed in the volatilisation and decomposition of the salt, which causes a considerable drop in the temperature of the oven. For this reason the full quantity is not introduced at once, but in two or three operations, at intervals of 20 to 30 minutes. To prevent the vapours from escaping too rapidly from the kiln, the damper in the main flue is lowered during the introduction of the salt, partially closing the flue and reducing the draft.—*Ex.*

COLORED MAN KEEPS SEVEN MEN BUSY CARRYING THE PAVERS TO HIM

Perhaps the most expert brickpaver who ever plied his trade in Altoona, Pa., is the colored man laying the pavers for Bowman Bros. on Green avenue. He is certainly a wonder. Crowds of people watch him work and regard the exhibition as something well worth seeing.

The negro is so expert that he can lay the brick as fast as seven laborers can carry them to him. He finds plenty of time to rest when but four or five men are carrying the brick from the sidewalks along the job.

He considers the laying of 20,000 brick an ordinary day's work. When the brick are brought to him rapidly he can put down 25,000, and even more. He is paid the handsome salary of 60 cents an hour, or \$6 a day, if he lays 20,000, but if he gets down 25,000 he receives 70 cents an hour, or \$7 a day. He does not work from his knees, like them men employed on paving around here usually do. He stands on his feet and reaches down without bending his legs, apparently.

WELFARE WORK AT THE RAYMOND COMPANY'S FACTORY

The C. W. Raymond Company of Dayton, Ohio, are among the concerns whose interest in the workers in their factory extends beyond their mere earning capacity. To this end they co-operate with the Dayton Y. M. C. A. and have weekly meetings during a part of the noon lunch hour, usually occurring on Tuesday and lasting for about fifteen minutes. This meeting is presided over by a representative from the Y. M. C. A. and consists usually of two songs by the workers, a solo, and a short talk, ending with prayer. These talks are usually of a religious nature, dwelling largely on "The Life of Christ." However, religious subjects are occasionally put aside and a practical talk is made on some secular subject which is of live interest to the men.

WILL SHIP RAW MATERIAL FOR FIRE BRICK

The work of installing the plant at Ableman, Sauk county, Wis., for producing the ganister by the Harbinson-Walker Refractories company of Pittsburg, which has completed arrangements for a plant costing nearly half a million dollars at Indiana Harbor, near Chicago, has commenced. The plant at Ableman will cost about \$40,000 and will be in working order within a few months. The ganister will be used in brick for lining the great iron smelters. It is reported that the Ableman plant will employ about five hundred men.

Shipping of the stone which is to be used for making fire brick will commence along in the first part of July, when they will make a beginning of 150 tons per day. It will go from Ableman to the plant at Indiana harbor.



Among the recent secular subjects a series of five lectures on "First Assistance to the Injured" was given by a practical physician. This subject has shown itself to be of great value to the men. The Raymond Company find that the men are greatly improving in their daily habits, are working more conscientiously, and there is a very notable lack of profanity about the factory.

This is one of the best pieces of welfare work which has been undertaken in the larger cities, and has had great influence toward the betterment of the wage earners in Dayton.

The photo shows a number of interested employees of one of the departments.

Mr. James Lochrie of Toronto, Ontario, is installing a "Martin" Improved Style "A" Steam Power Brick Machine in combination with 10-ft. Pug Mill and Mould Sander, this being one of the modern Improved "Martin" Machines built at Lancaster, Pennsylvania, by the Henry Martin Brick Machine Manufacturing Company.

Silica is the valuable component of this rock. It has proved under the test to contain as high as 98½ per cent and not lower than 96 per cent, silica. The other components are iron, lime and sand in small amounts.

That the Ableman stone is superior to almost any within reach of the Northwestern railroad is proved by the fact that the company has commenced to install a new \$4,000 air compressor plant at the Ableman quarry for the purpose of running the drills. This plant takes the place of the old hand and steam method of drilling into the rock for blasting purposes. At present about eighty men are employed in the quarry. The requirement of the Northwestern for building stone, for bridges and culverts, has been increasing so that it was necessary to increase the quarry facilities.

There are six stone plants, in that locality, that of Will Gall, two that belong to the Northwestern railroad, one of the Illinois Steel company, one of the Refractories company, and that of the Wisconsin Granite Co.

FIRE-PROOF CONSTRUCTION

A great fire, resulting in the sacrifice of hundreds of human lives and the loss of many million dollars' worth of property, is possible in every city of the United States. The calamities of Chicago and Baltimore might be duplicated in New Orleans or St. Louis. An earthquake in New York equal in intensity to the one in San Francisco would cause an appalling loss of life and property. Investigations made by three of the most competent structural experts in the country have led them to the conclusion that there are no absolutely fire-proof buildings. Not that fire-proof buildings are impossible, for, according to these experts, structural materials may be so selected and used that adequate fire protection is practically assured; but in the effort to cheapen construction in order to obtain greater interest on investments, owners of buildings have neglected or ignored perils to lives and fortunes.

Soon after the San Francisco earthquake, the Interior Department at Washington, through the United States Geological Survey, assigned to Richard L. Humphrey, Secretary of the National Advisory Board on Fuels and Structural Materials, and Prof. Frank Soule, dean of the College of Civil Engineering of the University of California, the task of investigating the action of the fire and earthquake upon so-called fire-proof buildings. At about the same time the War Department assigned a similar task to Capt. John Stephen Sewell, Engineer Corps, U. S. A., whose reputation as an expert on fire-proof building construction is international. After a thorough investigation these officials have prepared a careful report, which has just been submitted to the Interior Department and will soon be published by the Geological Survey. The conclusions presented in this report are of great interest and value.

Mr. Humphrey, emphasizing the fact that the lessons of the Chicago and Baltimore fires are still unlearned, declares that a remedy for existing conditions can be had only by the enactment of strict building laws which will compel fire-proof construction. Professor Soule estimates that the earthquake caused directly less than 10 per cent of the total loss at San Francisco, and that of the subsequent and indirect effects—the paralyzing of the water supply and its distributing system, the starting of a fire impossible to extinguish with the means at hand, the death of at least 500 persons, the destruction of \$500,000,000 worth of property, and the remoter damages to business, commerce, and labor—nearly all might have been prevented by wise foresight and provision. Captain Sewell points out the fact that fires and fire tests have proved conclusively the inadequacy of commercial methods of fire-proofing as at present applied.

The recommendations of the experts as to the essentials of fire-proof construction are definite and positive. High, steel frame office buildings, properly braced, are declared to be stable and reliable, and concrete and reenforced concrete structures are placed high among materials well adapted to withstand earthquake and fire, while hollow tiles and hollow concrete, although not in the past universally successful, may be so employed as to yield most satisfactory results. Concrete floors with metallic mesh reenforcements are strongly recommended for strength and fire resistance, and wire glass, metallic rolling shutters, and metal sash have proved such excellent fire protectors that wise economy demands their use in every important building. Other materials and measures equally important are enumerated, and it is believed that their adoption, while involving increased cost of construction, will insure permanence of structure and at the same time greatly reduce rates of insurance.

KATY ENGINEERS ARE NOW LOCATING BIG BURNT CLAY PITS AT HILLSBORO

Recognizing the value of burnt clay, or gumbo, as a most excellent ballasting material, engineers of the M., K. & T. are now at Hillsboro, where preparations are being made for the establishment of a large gumbo pit on a tract of land in Hill County. As long ago as 1897 the officials were planning to make use of this material in preference to cinders, crushed rock or chat, and a plant was established near the site of the new one now being opened. This ballast it is proposed to use on all the lines in Texas not already having it, and some 300,000 yards will, it is expected, be burnt this year. Ballast from the pits at Floyd is now being used on some parts of the Katy south of Denison, though a large portion of the road has already been ballasted. Recent information from headquarters indicates that a pit will be established at some point on the Choctaw division of the Katy, but local officials of the road in Denison have not yet been advised of such a move. In fact, it was stated by an official that this last move in making arrangements for a new pit was probably the result of the recent trip of Vice President Allen and General Superintendent McDowell to that locality, and while it has been generally accepted that sooner or later the Choctaw division of the Katy would be ballasted with gumbo, no definite time is known when operations will commence. Railroad officials are much in favor of the new ballast, preferring it to rock, notwithstanding the fact that rock can be secured in abundance and cheap.

On the site selected by the engineering corps of the road an extensive excavation will be made. Into this will be thrown worn out ties, broken timbers and other wood refuse of shops and track and upon this will be laid a surface of coal. Then on this will be placed a deep layer of earth and the whole will be ignited. Layers of earth will be added from time to time and the fire, burning slowly, will gradually bake the earth in the entire pit, so that, probably at the end of six or eight months, the mass will be ready for use.

TEXAS BRICKMAKERS' CONVENTION

Waco, Tex., June 6.—The Brick Manufacturers' Association of Texas adjourned today and will hold the next meeting at Austin Sept. 11. Officers present at the meeting were: C. R. Sherrell of Corsicana, president, and R. D. Harry of Dallas, secretary.

Papers were read and discussed on the following topics: "How to Market Brick," Charles Coleman, Tex.; K. Schwartz, Corsicana.

"Cost of Burning," by F. J. Cole, Ferris.

"The Commission Man or Agent the Demoralizer of Prices," Walter Bennett, Millsap, Tex., and R. D. Harry, Dallas.

"Cost of Wear and Tear on a Plant Should Be Added to the Price of the Brick," Walter Bennett, Millsap, Tex.

"Why Should Not Fire Brick Take the Same Rate as Common?" J. Vandaneer, Athens, Tex.

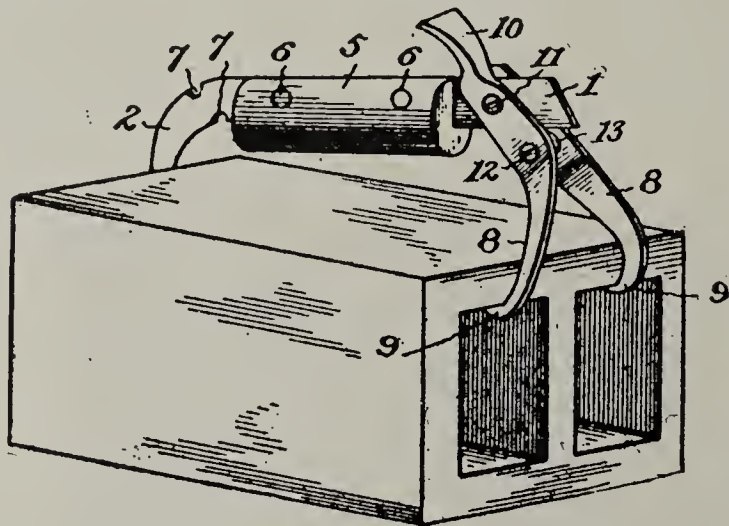
"Treatment of Labor and Its Bearing on Production," Schuyler Marshall, Mesquite, Tex.

NEW INVENTIONS THAT ARE OF INTEREST TO THE CLAY MANUFACTURER.

These new inventions are those that are especially of interest to anyone engaged in the line of building materials and their manufacture, or machinery to make them.

849,897. Implement for Handling Hollow Bricks. Charles S. Hall, Lohrville, Iowa. Filed Dec. 20, 1906.

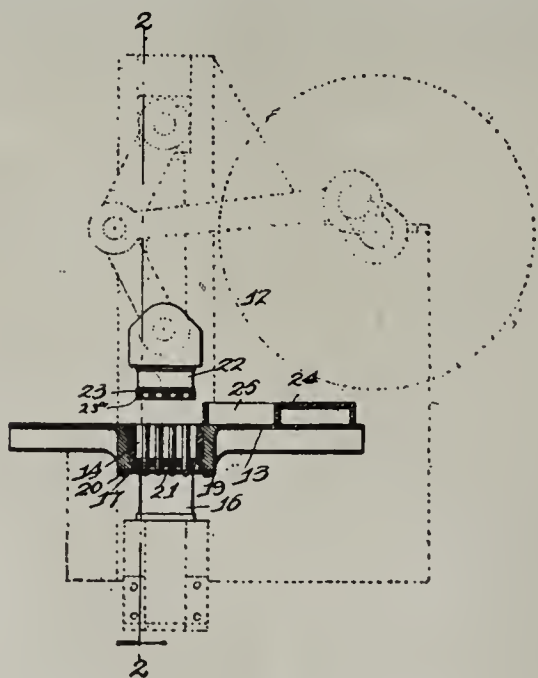
Claim—In an implement for handling hollow bricks, the combination, of a bar having a jaw formed at one end thereof, a pair of jaws pivoted to the other end of the bar, one of said latter jaws being extended slightly beyond the opposite side of the pivot to form a thumb-piece for operating the pivoted jaws, and a hand-grasping portion on the bar between the fixed and pivoted jaws.



In an implement for handling hollow bricks, the combination, of a bar having a hook or jaw at one end thereof, a pair of jaws pivoted on the other end of said bar, one at each side of the bar, a thumb-piece formed at the upper end of one of the pivoted jaws, a bolt connecting the pivoted jaws below the bar and adapted to limit the outward movement of said jaws, and a hand-grip attached to the bar between the sets of jaws.

850,038. Brick-Mold. Friedrich Mueller, St. Louis, Mo. Filed Aug. 27, 1904. Serial No. 222,440.

Claim—In a brick-mold, a fixed bed-plate, provided with compression-chambers, a lower compression member I-beams carried by the compression member and fitting in the compression-chambers, a finishing-plate carried by

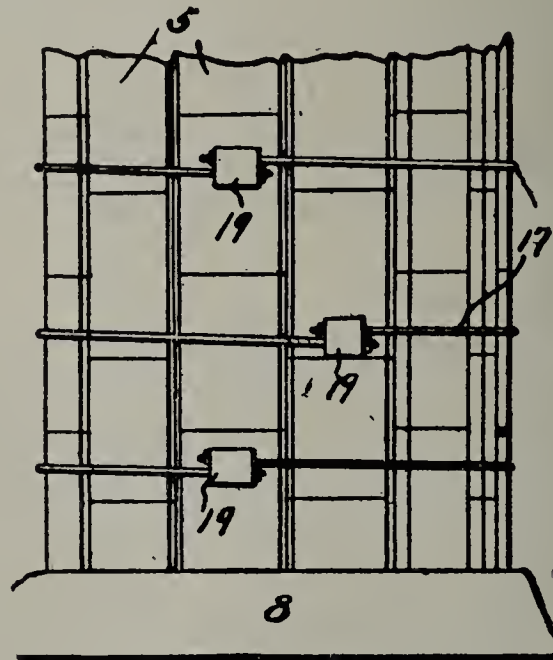


each I-beam, the tops of which I-beams and finishing-plates are perforated, plates secured to the under side of the bed-plate, pins secured to said plates and projecting upwardly through the perforations in the I-beams and finishing-plates, and upper compression members operating in opposition to the lower compression members, and being provided in their under sides with recesses to receive the upper ends of the pins and perforated finishing-plates rigidly fixed to the under sides of the upper compression mem-

bers; substantially as specified.

850,048. Building-Block. Sterling T. Playford, Cassopolis, Mich. Filed Jan. 20, 1906. Serial No. 297,043.

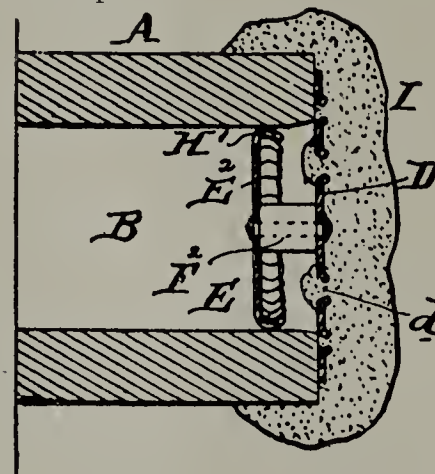
Claim—In building construction, a plurality of blocks each having one longitudinal edge thereof convex and its opposite edge concave for the reception of the convex portion of an adjacent block, said blocks being laid in circular form and arranged in superposed courses, and a binding rod engaging the side walls of the several blocks at convex ends thereof and spaced laterally from the concaved ends of the blocks.



In building construction, a plurality of blocks each having one longitudinal edge thereof convex and its opposite edge concave for the reception of the convex portion of an adjacent block, said block being laid in superposed courses to form a circular wall, a diaphragm interposed between adjacent courses at one end of the wall, a central support for the diaphragm, and binding-rods embracing the wall and bearing against the walls of the blocks at the convex ends thereof, said rods being spaced laterally from the concaved ends of the blocks.

849,415. Plug for Sealing Underground Conduits. William L. McGowan, Philadelphia, Pa. Filed April 28, 1905. Serial No. 257,848.

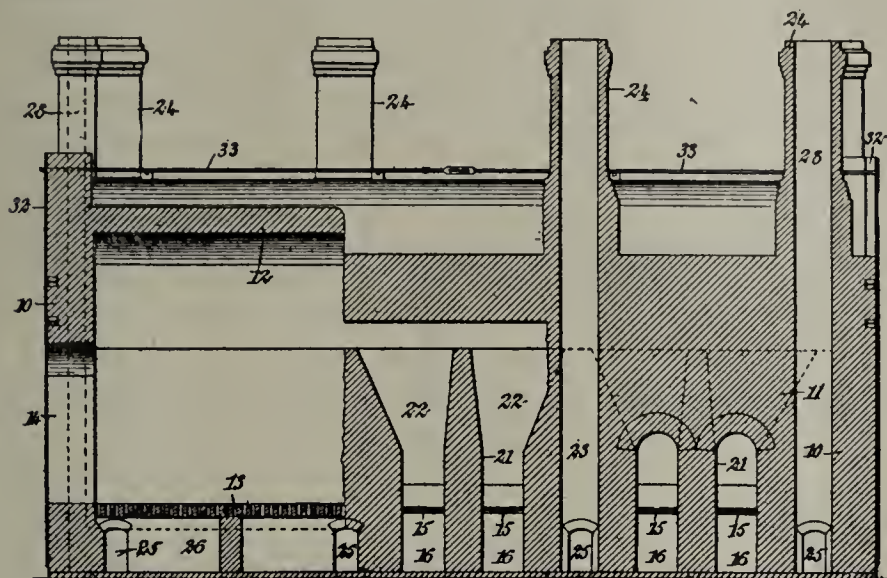
Claim—The combination of a conduit having a duct, with a sealing plug consisting of a front plate having a series of perforations and a retaining part frictionally held within the duct for holding the front plate in position against the front of the conduit, and a covering of cement mortar over the end of the conduit and front plate and extending into the perforations thereof so as to bind the cement mortar to the plate.



A sealing-plug consisting of a front plate having a series of perforations formed with outwardly-extending edges forming conical depressions upon the inner face of the plate adjacent to the apertures, combined with a retaining part of smaller area having a flexible rim adapted to be frictionally held within the duct, and rigid connections between the front plate and retaining part whereby they are held apart.

850,066. Kiln. John A. Shumaker, Hyndman, Pa., assignor of one-third to George William Brinham and one-third to Norman Reuben Shumaker, Hyndman, Pa. Filed Oct. 10, 1906. Serial No. 338,264.

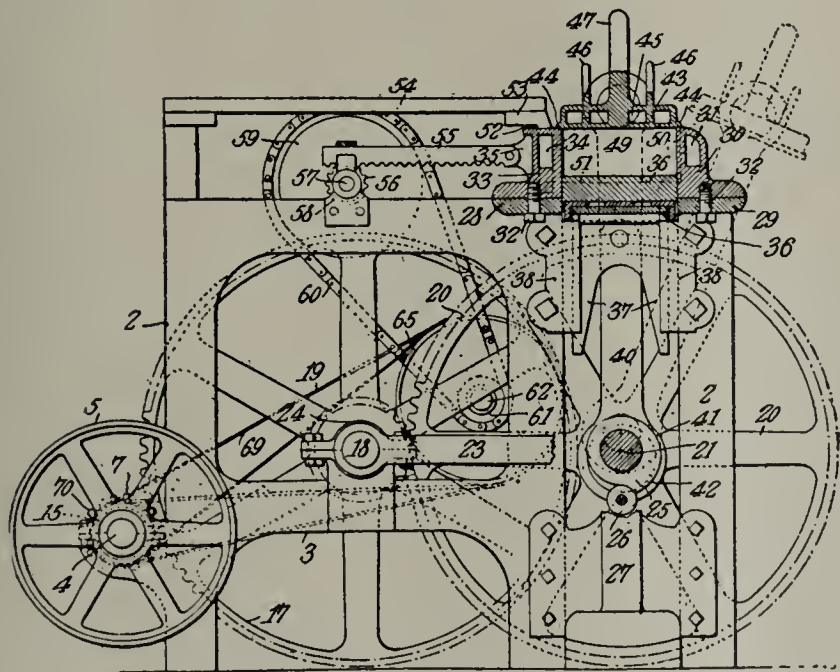
Claim—The combination with a kiln, and furnaces in the side walls of the kiln, of a bag-wall at the inner face of the side wall and having vertical flues arched away from the furnaces.



The combination with a kiln, and furnaces in the side walls of the kiln, of a bag-wall at the inner face of the side walls and having a vertical flue for each furnace, said flues being arched from the furnaces and flared outwardly at the sides, one side being flared more than the other.

850,676. Brick-Machine. David P. Sanders, Reading, Pa. Filed Feb. 20, 1907. Serial No. 358,432.

Claim—In a brick-machine, a compression-chamber having fixed side walls and movable top and bottom walls, a rotatable power-shaft movable to and from said compression-chamber, connections between the shaft and the top wall of the compression-chamber participating in the movement of the shaft with relation to its axis but not participating in its rotative movement, cams on the shaft and rotatable therewith, and connections from the cams to the bottom wall of the compression-chamber for moving the said bottom wall independent of the movement of the shaft toward and from said compression-chamber.

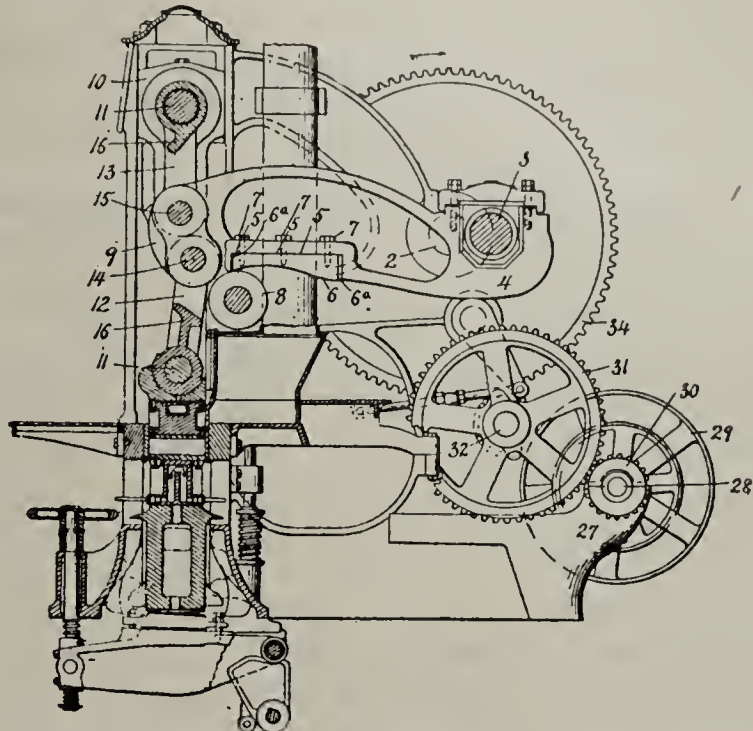


In a brick-machine, a power shaft, a pinion thereon, a clutch for connecting the pinion to the power-shaft, a gear-wheel on another shaft in the machine meshing with said pinion, another gear-wheel meshing with the pinion on the second shaft, a third shaft supporting the second gear-wheel, link connections between the second and third shafts whereby the third shaft may be moved about the second shaft's axis, a compression-chamber having fixed side walls, a cap for the compression-chamber movable with the

third shaft at a fixed distance therefrom, a follower constituting the bottom of the compression-chamber, and cams on the third shaft for operating the follower.

850,435. Brick-Machine. Oswald Kutsche, York, Pa., assignor to Gustave A. Woltman, York, Pa. Filed June 8, 1906. Serial No. 320,780.

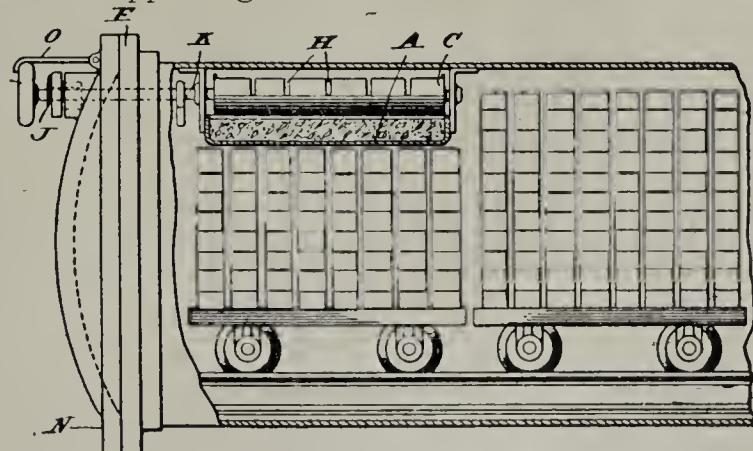
Claim—In a brick-press, the combination with a power-shaft, of a lever journaled thereon, a changing fulcrum for said lever and toggle-links eccentrically journaled on the outer end of said lever.



In a brick-press, the combination with a mold and plungers working therein, of side bars carrying the lower plunger, a toggle-link pivotally secured at one end to the upper ends of the side bars, a pitman-lever to which the other end of said link is pivotally secured, a toggle-link pivotally secured at its upper end to the pitman-lever, and carrying the upper plunger, said links having eccentric heads adapted to contact during a portion of the movement of the toggle.

851,406. Manufacture of Sand Lime or Composite Brick or Stone. Allen S. Crocker, Rochester, N. Y., assignor to Laurence Elkus, Indianapolis, Ind. Filed Nov. 21, 1906. Serial No. 344,392.

Claim—In a hardening cylinder, a pan adapted and constructed to contain calcium carbonate, means for suspending said pan from the top of said cylinder, a vessel or vessels adapted and constructed to contain hydrochloric acid, means for supporting said vessel or vessels above said pan,



a shaft in said cylinder, means for supporting said vessel or vessels on said shaft above said pan, and means for revolving said shaft and said vessel or vessels, substantially as described.

In a hardening cylinder, the combination of a pan (A), means for suspending said pan from the top of said cylinder, vessels (B), (C) and (D), a shaft (F), means for supporting vessels (B), (C) and (D) on said shaft above said pan and means for revolving said shaft and said vessels (B), (C) and (D).

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No. 11

"I like to read American advertisements. They are in themselves literature, and I can gauge the prosperity of the country by their very appearance."—William E. Gladstone.

When times are dull and people are not advertising is the very time that advertising should be the heaviest. Ninety-nine out of every hundred merchants advertise most when there is least need of it, instead of looking upon advertising as the panacea for their business ills.—John Wanamaker.

If work was as easy as lying everybody would be busy.

Opportunity has a way of greatly increasing in size when we look back at it.

Don't grumble if you don't get as good results from old material or machinery as you do of new.

It is surprising how many really good people there are in this world—if you can take their word for it.

We are sure we are here, but we are not sure of the hereafter—therefore it's advisable for us to be as good as we can.

The men who have acquired wealth in accordance with the prescriptions contained in books on "How to Succeed" must be very scarce or else they are experts at keeping secrets.

Subscribe for the CLAY RECORD this month if you did not do so before. It is the only paper in the trade that is printed twice a month. Its cost is only a trifle. You will never miss it. If not satisfied at the end of the year your money will be refunded.

MANUFACTURERS OBJECT TO DRIVING KILNS FROM CITY

At a recent meeting the St. Louis Manufacturers' Association resolved to support the smoke suppression ordinance being prepared by Smoke Inspector Jones and to oppose the one proposed by Civic league. The Jones ordinance designs to deal with the nuisance by insisting that licensed and responsible firemen be in charge of furnaces, and that the licenses may be acquired only by an examination. The theory is that the fireman who knows and attends to his business can greatly prevent smoke. The Civic league ordinance proposes the compulsory use of smoke consumers. The Manufacturers' Association says the smoke "consumer" is a failure, and that if an ordinance compelling it were passed it would drive out of St. Louis the brick, tile and terra cotta plants, as they could not possibly use "consumers" over their kilns.

BIRMINGHAM BRICK INDUSTRY STEADILY GROWS

The brick industry is making steady progress in the Birmingham (Ala.) district.

So overshadowing has been Birmingham's iron interest that other branches of industrial enterprise have been developed hereabouts almost unnoticed. While they do not rank with Birmingham's mainstay, they are nevertheless important and profitable, and go to make up that diversity of manufactures which increase appreciably the district's volume of business.

Speaking of brick making, ten years ago Birmingham had only two plants, and they were small and antiquated. Only building brick of a very common grade was turned out. Today there are eleven or twelve plants making building brick of the finest quality, including every style and color. Most of these plants are quipped with all the improved modern devices.

Ten years ago the entire product of the two brickyards was at the rate of only a million annually. Now Birmingham's annual output is estimated at fully 40,000,000.

The clay of Jefferson county is admirably adapted to the manufacture of building brick, and as comparatively little capital is required in equipping and operating a plant, the industry will grow fast. Then, too, the local demand is already far greater than the supply. The 40,000,000 brick made in the Birmingham district last year was not one-third the quantity used here. If the capacity were quadrupled in 1907 the local demand would not be supplied, for this is to be an exceptionally busy year in the building trades.

Men familiar with the building brick industry say that if 200,000,000 were made here there would be a good shipping demand for all in excess of home consumption.

The price of the best Birmingham brick averages about \$7 per thousand. This leaves a good profit for the manufacturer.

Fire brick of superior quality has been manufactured in the Birmingham district for many years, and recently the manufacture of shale brick, used for street paving, has been added to the district's industries. There are now two large shale brick concerns operating in Jefferson county, and another company for the manufacture of this valuable commodity is about to be organized. There is said to be room for many of them. In five years from now Birmingham will be one of the brick making centers of the country.

FIRE! FIRE! FIRE!

The machinery building of the Port Gibson (Miss.) Brick Manufacturing Co. was destroyed by fire, causing a loss of \$10,000.

Fire of an unknown origin caused a damage to the plant of the Los Angeles (Cal.) Brick Construction Co., at Central and Jackson streets.

The Watertown (S. Dak.) Pressed Brick Co.'s plant has been destroyed by fire, causing a loss of \$14,000, with only \$2,000 insurance. The plant was just completed.

The plant of the Marquis Clay Co., New Castle, Pa., was partly destroyed by fire, causing a loss of \$15,000, all fully covered by insurance. All of the machinery and the engine were destroyed.

OBITUARY

A. L. Hugenburger, one of the proprietors of the Talula (Ills.) Electric Light, Tile & Brick Co., was instantly killed by a live wire.

John J. Kerr, a prominent brick contractor of Jonesboro, Ark., dropped dead while at work. He was an Elk, an Odd Fellow, and a Knight of Pythias.

ACCIDENTS, DAMAGES AND LOSSES

The property of the Schuylkill Valley Clay Mfg. Co. was sold at Reading, Pa., for \$37,000, to C. H. Ruhl.

R. R. Morris, proprietor of the Dover (Vt.) Brick & Pottery Co., has made an assignment for the benefit of his creditors.

Suit for \$5,200 has been filed against the Logan (Ohio) Brick Manufacturing Co. by a brick machinery manufacturing company.

By the bursting of a fly wheel in the Farr Brick Co.'s yard at Cleveland, O., one man was fatally injured and a boy made a cripple.

A petition in involuntary bankruptcy has been filed against the Union Potteries Co., of Pittsburg, Pa., the total claims amounting to \$2,544.

The Macomb (Ills.) Sewer Pipe Co. has filed involuntary bankruptcy proceedings against the Bank of Macomb, C. V. Chandler and C. A. Chandler.

In a brick yard fight at the New England Brick Co.'s Cambridge, Mass., plant a negro fractured the skull of Philip Mondou so he is in the Cambridge Hospital in a dying condition.

W. H. Barnes, an employe of the Peoples' Brick Corporation at Towson, Baltimore Co., Md., is suing the company for \$10,000 damages for injuries received by an explosion of a boiler.

John Burwood, an employe of the Purington Paving Brick Co. at Galesburg, Ill., was hit on the chest with a sledge hammer while holding a Johnson bar for a fellow workman. Two ribs were broken.

Brown Edmonton, secretary and treasurer of the Gleason (Tenn.) Brick Co., caught his left arm in a part of the gasoline engine while regulating it, breaking the bone and, next day, while repairing a clutch on the brick machine, caught himself on same, so injuring his other arm that they both are now in a sling.

AMERICAN MANUFACTURERS SAY FRENCH COMPETITION HAS BEEN DANGEROUS

Trenton, June 12.—Pottery manufacturers here are greatly pleased over the decision of the board of general appraisers advancing the valuations on the imports of Haviland & Co. William Burgess, the agent of the United States Potters' Association, who secured considerable testimony in the case, said:

"I am naturally much pleased at the reversal of the decision of the single appraiser, but do not consider it a reflection on Judge Waite in any way, for, as I said on a previous occasion, I feel quite sure that the judge did not have the time to fully consider the vast amount of testimony before him, because of the pressure brought to bear on the case by diplomatic circles to hasten a decision. I have felt from the first that the government had a strong case against the importer."

Charles Howell Cook of the Cook Pottery Co. said:

"I consider the decision of the board of general appraisers as fair and equitable, and I am satisfied that it will be considered so by importers and manufacturers alike when it is fully understood."

"We have been up against this undervaluation of French goods for some time," said Charles A. May of the Mad-dack Pottery Co., "as we are direct competitors with them in this line of goods. This decision means a great deal to us, and especially to our men, as they are as much interested in the proper valuation of the foreign made goods as we are. We had a hard fight to hold our own against this foreign competition and maintain our present wages, and every drop in protection means less possibility to meet that competition."

A. G. Dale of the International Pottery said:

"It is not a matter of getting more protection, but of holding on to what we have. In many cases the protection is nominal and inadequate, and we cannot possibly compete. We cannot get more than the law provides, but we want to get as near what we are entitled to as we can. Our business depends on this, and the only way possible to maintain the wages we are now paying is to get our due. This is not an increased protection, but a recovery of a little we have lost."

OHIO VALLEY MANUFACTURER

The Clay Record acknowledges the receipt of a copy of the New Cumberland Boom Edition of the Ohio Valley Manufacturer, a trade paper that is published at Wheeling, W. Va., with J. C. Moves as editor. The paper consists of almost one hundred pages that contain write-ups and cuts of the various manufacturing plants in New Cumberland and the surrounding country. The Manufacturer was started in Wheeling in 1887 and has steadily grown until now it is the most important paper of its kind in the entire Ohio Valley. The New Cumberland Edition is one of the best industrial editions that we have ever seen. New Cumberland is the home of the sewer pipe and brick making industry of West Virginia, and the plants that make articles from fire clay have been given the greatest amount of attention in the boom edition. Copies of the Industrial Edition reached every manufacturing concern in the country.

SEWER PIPE FOREMAN DEPOSED AFTER STRIKE

More than one hundred and fifty men employed by the White Hall (Ills.) Sewer Pipe and Stoneware company went out on a strike and the plant was temporarily tied up. The grievance of the strikers is for a new boss. There seems to be no trouble in regard to wages or other conditions, but they demand that P. J. Fish, the general manager of the concern, be deposed at once. Mr. Fish took charge of the management on April 1, 1907, coming from Akron, Ohio.

There has been a weeding out of some of the employes during the past three weeks, but no attention was paid to that by the better class of workmen until a few days ago, when Mr. Fish drew a revolver on a couple of workmen with whom he had had trouble regarding an order for one of the men to leave the shop. For this offense the police magistrate assessed a fine upon Mr. Fish, which was paid.

H. C. Morrow, president of the Sewer Pipe and Stoneware company, called the men together and made a proposition to them to return to work until matters could be properly adjusted.

Speeches were made by H. C. Morrow, president of the company, and by the Rev. W. M. Hailey, pastor of the M. E. church, but to no avail. The men demanded that Fish be removed and a new foreman put over them and then they would go to work. After two days of conference between the committees representing the workmen and the president of the plant, it was decided that Mr. Fish be deposed. In accordance with this statement by the president, the men, through their committee, signified their willingness to return to work, which they did, and everything is now running in good order.

HUDSON RIVER BOATMEN WIN SUIT

Judge Ray, of the United States Court, has handed down a decision in favor of William Guindon and Edward O'Neil in their action against the Carey Brick Company, of Cohoes, N. Y. They are both rivermen, O'Neil being a resident of Watervliet, and Guindon of Champlain.

They carried brick on their boats to various places along the Hudson river for the Carey Company. One consignment they had for West Farms they claimed they were unable to unload because of the poor condition of the dock there.

They delivered the brick at Newark, N. J., and sued the brick company for demurrage and wharfage. Lester W. Bloch appeared for the boatmen and Holmes and Bryan, of Troy, were the attorneys for the Carey Company. The action was tried at the February term of the court in Albany.

The Craig Colony for Epileptics at Sonyea, New York, who have been operating the "Martin" equipment, have added to their plant a "Martin" latest improved heavy all iron and steel style "P" Steam Power Soft Mud Brick Machine, manufactured by the Henry Martin Brick Machine Manufacturing Company at Lancaster, Pennsylvania.

LACLEDE-CHRISTY CLAY COMPANY INCORPORATES

The Laclede-Christy Clay Products Company, the new corporation formed by the consolidation of the Laclede Fire Brick Manufacturing Company and the Christy Fire Clay Company of St. Louis, Mo., has filed its articles of incorporation. The formation of the merger was published a month ago. The consolidated company will be the second largest manufacturer of fire clay products in the United States in point of output and capital invested. The new corporation is capitalized for \$4,000,000, divided into \$2,750,000 of preferred stock and \$1,250,000 of common stock. The preferred stock is entitled to a preferential dividend of 6 per cent. The capital stock is fully paid.

The principal officers and stockholders in the two old companies are to continue as stockholders in the new concern. James Green, president of the Laclede company, will be chairman of the board of directors, and Calvin M. Christy, president of the Christy company, will be chairman of the executive committee. William C. Morris of the Christy company will be president; John L. Green, son of James Green, vice president, and Richard D. Hatton, secretary and treasurer. Other directors will include Montague Lyon, an attorney, and R. H. Miller, who will be general sales manager.

For the purposes of the incorporation the stock is held as follows, as shown by the articles: Alexander Russell, 27,495 shares of preferred and 12,495 shares of common; W. J. Holbrook, G. H. Blackwelder, W. C. Mitchell, E. W. Banister and S. T. Bixby, one share each of preferred and common. None of these stockholders will figure as important shareholders or directors in the final organization. W. J. Holbrook promoted the merger.

The companies going into the merger are the oldest fire clay concerns in St. Louis, the Christy factory having been started in 1857 by the late William D. Christy, and the Laclede in 1844. They are manufacturers of fire brick, sewer pipe, clay retorts and similar products. The Laclede company has a plant embracing three factories at Manchester road and Sulphur avenue, and the Christy company has an extensive plant at Morgan Fork road and Gravois avenue. Both of these plants will be continued in operation.

UNION TIES UP BRICK YARD

A brick famine threatens Maynard, Ind., and adjacent territory as the result of a strike which tied up the yard of the National Brick company. Officials of the brickmakers' union at Maynard charged that the company violated an agreement recently made with the union.

Supt. S. J. La Bahn of the strike-bound yard admitted that the company made a contract with the union May 1 to pay 50 cents a thousand for handling brick, a raise of 3 cents over the former scale.

"We were losing money at the increased price," Mr. La Bahn explained, "and had to return to the 55-cent rate in order to continue in business. When we did so the men struck."

One hundred and fifty brick makers are out.

ILLINOIS BRICK EARNINGS LARGER

Illinois Brick is earning its regular dividend and making a good profit at the present selling price of \$7 a thousand. It is expected that the usual quarterly disbursement will be ordered at the next meeting of the directors later in the month, as the demand for brick is more active than a year ago and supplies are ample to meet all requirements. Chicago plants are in full operation, and it is expected that the year's output will be largely in excess of 1906.

A "community of interests" among Chicago manufacturers was brought about with the retirement of President Prussing at the annual meeting of the Illinois Brick company, and a scale of prices adopted which insures a period of profitable operations during the pendency of the agreement. Prices were advanced from \$5 to \$6 when the brick war came to an end four months ago, and a recent rise to \$7 means an era of prosperity to all the companies.

The big companies are able to turn out brick at \$3.90 a thousand, and, although operations were delayed by the backward spring and long era of cold weather, stocks carried over were sufficiently large to enable the several companies in the agreement to conduct their business profitably before their supplies were exhausted.

DEMAND FOR BRICK IN NEW YORK IS INCREASING

Brick building in New York city is increasing, and the demand for Hudson River brick is now about 80 cargoes a week, which is a high average. The best grade of Hudson Rivers bring \$6.75 to \$7.25 per thousand, with light hards at \$3.75 to \$4.25. Thus far projects are twenty millions of dollars' worth behind last year's sum in Manhattan, and eight millions short of the 1905 projects.

VIRGINIA'S NEW INDUSTRY

A very interesting test of Paving and Building Brick was made by the Virginia Clay and Material Co., of Farmville, Va., in order to practically demonstrate the value and superiority of their brick. They arranged for a test through their general agent, A. F. Matlack, who carried on the said test in the Jefferson Hotel, who were admirably fitted up with the necessary facilities.

The object of this test was to show publicly that sudden contraction or expansion would not in any way affect the brick made by the Virginia Clay and Material Co., and under their process, and that under ordinary conditions would be practically indestructible.

TEST.

Began 5 P. M. June 6th. Ended 10:15 A. M. June 10th.
Paving Brick weighed 4 lbs. 8 oz.

Building Brick weighed 4 lbs. 6 oz.

June 7, 10 A. M.—After soaking 17 hours showed increase: Paving Brick, 4 lbs. 9 oz; Building Brick, 4 lbs. 8 oz.

June 8—After freezing 24 hours, temperature 26 degrees, showed no change, and while in a frozen condition were placed in a temperature of 140 degrees and there remained for 48 hours.

June 10—After 48 hours' treatment under this heat they showed that they were still in their original condition, which proves beyond all reasonable doubt their great value.

WILL MAKE BRICK FROM STEEL SLAG

I. G. Trauerman, of Trauerman & Co., live stock commission merchant at the Sioux City, Iowa, stock yards, has been elected president of the American Block and Brick company of Pittsburg, Pa., a company which proposes to manufacture high class brick and building stone of the slag from the furnaces of the Carnegie steel works.

The election assures Mr. Trauerman of a fortune, the extent of which, estimated by Henry C. Frick, of the Carnegie Steel company, runs into seven and eight figures, as Mr. Trauerman is one of the original owners of the company, which in its infancy was only the scheme of the inventor of a process to manufacture the slag into building material or tiling.

This announcement was made when a contract was signed by Mr. Trauerman with the Carnegie Steel company, of Pittsburg, covering a period of ten years, whereby the American Block and Brick company secures the use of three of the big blast furnaces of the Carnegie Steel company, and purchases 400 tons of slag daily at the low rate of 10 cents per ton. The company also secures five acres of ground within a convenient distance from the 105 furnaces of the Carnegie Steel company, that the slag may be transported to the brick works on small cars at small cost.

The American Block and Brick company propose to begin at once the manufacture of a brick which promises to become one of the most popular building materials of modern times. For years the steel companies have been at a loss to know what to do with the slag.

Formerly the leavings from the iron and manganese ore were dumped onto cars in a molten mass, and the slag was thrown out in large lumps, weighing half a ton to a ton each. But in recent years when it has been a problem to know what to do with the slag, it has been dumped into large cement tanks direct from the furnaces, which granulated it and made it much easier to handle.

This granulated slag consists of 28 per cent lime, about 32 per cent sand and almost 40 per cent cement. By a patented process the American Block and Brick company will take the granulated slag, and after drying and pulverizing it, press it into blocks of any size. The natural color is a grayish white, about the same as cement blocks but it may be made any color by mixing earth colors with it. This makes it possible for the company to imitate any color brick or building stone.

FORMER CLEVELAND BRICK MAN RETURNS

R. L. Queisser, formerly of Cleveland, Ohio, but for the past five years manager of the Zanesville Hydraulic Pressed Brick Co., has returned to Cleveland to take a position of sales manager for the Cleveland Hydraulic Pressed Brick Co.

With the combining of all the pressed brick plants the management of the Zanesville works will be directed from Cleveland. The position has been created for Mr. Queisser, who will have five men traveling in different parts of this district.

FORTY YEARS' OF SERVICE WITH ONE COMPANY

Jacob Berscheidt, the oldest employe of the Solfisburg Brick & Tile company, Aurora, Ill., commenced his fortieth year of service June 11th.

Mr. Berscheidt has been with the brickyard since its infancy, Christian Solfisburg, who founded the company, had been in business but two years when Berscheidt went to work for him. He has not worked for any other firm since.

SAND OR LIME BRICK OR BLOCK NEWS

K. Morrison, of Bay City, Mich., is to start a cement brick works at Carlyle, Manitoba. The machinery for same has already been shipped.

The Emery Cement Brick Machine Co., Bay City, Mich., has received an order for 150 of their cement brick machines, valued at \$15,000.

The proposed Logansport (Ind.) Sand-Lime Brick Co. expects to be making brick within 60 days, according to D. A. Gillespie, the promoter.

The Watertown (S. Dak.) Pressed Brick Co.'s plant, which was just completed, was destroyed by fire. It is said the plant will be rebuilt at once.

The Michigan Sand-Lime Brick Co., Grand Rapids, expects to begin the manufacture of brick early in July. Many orders have already been received by the company.

The 20th Century Tile Roofing Co. has been organized at Rochester, Mich., for the purpose of manufacturing cement shingle machines, the invention of G. L. Saterlee.

A. F. Lewis and J. J. Miller have purchased the business of W. L. McDonald in the manufacture of Meracle blocks at Santa Barbara, Cali. The firm name will be Lewis & Miller.

The Hondo Stone Mfg. Co., Roswell, N. Mex., has made arrangements to install new brick-making machines in their plant, which will give the plant a daily capacity of 50,000 brick.

The Manistee (Mich.) Brick Co. has been running their plant full blast since early spring, and are now ahead of the last year's business. Messrs. Marsh and Anthony are the prime movers in the enterprise.

The Granite Brick Co., Glen Falls, N. Y., recently held their annual meeting and elected the following officers: D. P. De Long, president; G. M. Ingasbe, vice president, and A. Z. De Long, secretary and treasurer.

By the terms of a compromise between the warring stockholders the United States Granite Pressed Brick Co., Los Angeles, Cal., has been combined with the Granite Pressed Brick & Stone Co., a new organization.

Barry, Mo., has a new industry known as the Barry Concrete Block & Brick Co. The stockholders are N. R. Davis, J. N. Moore, Harlan Horn and Theo. Tomlin. The company has purchased the old Christian Church property.

The business men of Luverne, Minn., have made the preliminary arrangements for the establishment of a new brick plant for the manufacture of sand-lime brick. The plant will cost \$30,000 and sufficient funds are already subscribed.

The Waterloo (Ia.) Concrete Roofing Co. has been incorporated with \$20,000 capital stock. It will manufacture machinery to make concrete shingles and roofing. F. W. Reisinger is president, and C. M. Straley, vice president and secretary.

The stockholders of the Indianapolis (Ind.) Composite Brick Co. recently held a meeting and elected the following directors: Lawrence Elkus, John G. Koeppen, Aaron Hill, J. H. Mills, Ewald Over, Henry Moots and John C. Webb. A banquet to the stockholders was given in the Grand Hotel.

MISCELLANEOUS ITEMS

C. A. Benton has purchased land and will establish a brick works at Corsicana, Texas.

The New Pana (Ills.) Brick & Tile Co. has been organized under the above style and name.

H. M. Baldridge, Mt. Auburn, Ills., has purchased land at Forest City, Iowa, and will build a \$12,000 tile plant.

Heavlin & Martin, Pleasant Valley, Iowa, are putting in electric machines to be used in making brick and tile.

The capital stock of the Dry Pressed Brick Co., of Spokane, Wash., has been increased from \$50,000 to \$100,000.

Dr. R. R. Stoner, Minneapolis, Minn., president of the Stoner Land Co., will establish a large brick making plant at Medicine Hat, Alberta.

The Gilmer (Texas) Brick & Block Co. has been incorporated with \$6,000 capital stock. Incorporators are S. J. Waghalter, F. S. Eberhard and others.

The West Park Brick Co., Strathcona, Alta., has closed a deal for 10 acres of clay land and will make common brick and later install a pressed brick plant.

The Ross-Keller Triple Pressure Brick Machine Co. is loading a six mould triple pressure brick machine for the Kaysville Brick Co. of Salt Lake City, Utah.

The Central Brick Co., New York, has been incorporated. Incorporators are A. C. Ormsbee, W. S. Woodhull and H. C. McCollom. 32 Nassau St., New York.

The Calder Brick Co., Emporium, Pa., has been absorbed by the Penn Vitrified Brick Co. C. H. McCutcheon of Buffalo, N. Y., is president and W. H. G. Walker manager.

The Western Fire Brick Co., Denver, Colo., William Geddis, president; David Seerle, vice-president, and S. P. Adams, secretary and treasurer, has bought land at Argo, Colo., and will erect a fire brick plant.

The Crescent Brick Co., Towson, Md., has been incorporated with \$150,000 capital stock. The incorporators are F. R. Biedler of New York, H. S. Mancha, James L. Sipple, H. H. Biedler and L. H. Gadd of Maryland.

The Morris (Man.) Brick Mfg. Co., Ltd., has been incorporated and will build a plant at that place. W. T. Windsor, a competent brickmaker of Winnipeg, is installing the machinery and getting the plant in shape.

The Stockton (Cal.) Fire & Enameled Brick Co. has been incorporated with \$100,000 capital stock, with M. J. Gardner president. They purchased land adjoining the glass works and expect to have a plant in operation by September.

The National Building & Paving Brick Co., Los Angeles, Cal., has been incorporated with \$300,000 capital stock. Directors are J. T. Colliver, W. C. Short, W. H. Esdohr, C. W. Reynolds, M. J. Danison, J. A. Colliver, and C. C. Reynolds.

The Ainslie (Ga.) Brick Co., of which J. R. Holmes is president, and C. H. Williams vice-president and general manager, of Macon, have secured 100 acres of Ocmulgee river bottom clay and have about completed their plant to make 30,000 brick daily.

The Ross-Keller Triple Pressure Brick Machine Co. has just shipped a complete four mould outfit to the Lyle Rock Co. of Kansas City, Mo. This company installed a Ross-Keller press a year ago, and are now doubling their capacity by the addition of another of these triple pressure machines.

The Ottumwa (Iowa) Pottery & Clay Products Co. has been incorporated with \$60,000 capital stock. J. T. Hackworth is president; Frank L. Hall, vice-president; E. R. Mitchell, secretary; J. B. Morey, treasurer, and J. P. Young, general manager. The company has taken over the Philpot property.

J. S. Kies, of Worthington, has bought A. C. Ady's interest in the Grundy Center (Ia.) Brick & Tile Co.

P. J. Mason, of Prosser, Wash., has had clays tested that are very satisfactory for brick and tile and a plant is a possibility.

The Utter Brick & Tile Mfg. Co. has a plant ready for operation at Marshfield, Oregon. D. A. Utter, formerly of Weiser, Idaho, is the proprietor.

The Potlatch (Idaho) Brick Co., Ltd., has been incorporated, with \$10,000 capital stock. Incorporators are J. A. Terteling, F. C. McGowan and H. P. Henry.

The Devonshire Brick & Ceramic Co., Roseville, O., owned by Columbus people, contemplates enlarging the capacity of the plant at once on account of the demand for the goods.

The Crucial Fire Brick Co., Rome, Ga., are now turning out brick at the rate of 40,000 daily. C. N. Fuller is the manager. The company intends to turn out common brick as well as crucial fire brick.

The Arkansas Brick Co., Texarkana, Ark., has been incorporated, with \$10,000 capital stock. The officers are H. L. Webster, president; W. E. Casey, secretary and treasurer, and H. C. Lehman, superintendent and manager. The company will establish a plant a short distance east of town.

The Iowa Brick & Tile Co., Des Moines, Ia., has been incorporated with \$10,000 capital stock. T. D. Fraser is president, and F. H. Overman, secretary, and Fred H. Huntington, director. They will operate the Iowa Brick Mfg. Co. plant.

T. C. Sherman, Campton, Ky., will develop clay deposits recently discovered.

W. A. Dodds, Hickman, Ky., will erect brick sheds, 66 x 200 feet, capacity 20,000 brick daily.

Three million feet of gas a day has been struck by the Davidson Brick Co., Follansbee, W. Va.

The Central Ohio Roofing Tile & Brick Co., Columbus, O., has reduced its capital stock from \$60,000 to \$1,000.

Martin Nelson has bought an interest in the Hillsboro (S. Dak.) Brick & Tile Company, and will act as its book-keeper.

The Denny-Renton Clay & Coal Co., Seattle, Wash., is to erect a sewer pipe plant near the Columbia & Puget Sound Railway right-of-way.

New York parties have purchased the brick works and adjoining land of George L. Tobin at Castleton, N. Y., and will manufacture brick on a much larger scale.

The Empire Clay Products Co., New York, has been incorporated with \$5,000 capital stock. Incorporators: F. A. Malette, Z. G. Haskins, R. S. Messinger, of Geneva, N. Y.

Mr. Snyder, of Humboldt, and W. W. Jones and Mr. Cleveland have announced that everything has been closed for the building of a new brick-making plant at Elsmore, Kansas.

The Pasco (Wash.) Brick & Stone Co. has been incorporated with \$10,000 capital stock, by N. T. Phillips, J. J. Hughes, N. R. Sylvester, R. J. Huston and W. E. Quinlan.

The New San Francisco Continuous Kiln

is the only CONTINUOUS KILN having regenerative furnaces for burning bricks with CRUDE OIL or POWDERED COAL

This kiln has the greatest thermic efficiency, for the following reasons:

FIRST—A perfect system of regulating the velocity of gases through the kiln.

SECOND—No excess of air, such as is required in UP-DRAFT or DOWN-DRAFT kilns.

THIRD—Perfect air recuperation.

FOURTH—Perfect combustion.

FIFTH—Loss by radiation reduced to a minimum.

SIXTH—No cold air admitted with the fuel in the combustion chambers.

SEVENTH—Heat generated instantaneously.

EIGHTH—No delays, no waiting for the coal or other fuel to ignite, as in the ordinary continuous kiln.

NINTH—The burning bricks receive the full benefit of all the heat produced, as the combustion chambers are contiguous to the kiln.

TENTH—The amount of heat generated is at least 100% greater than that produced by coal screenings dropped between the burning bricks in a given length of time, in the ordinary continuous kiln.

CONSTRUCTION

This kiln can be constructed with 10% less material than the ordinary continuous kiln.

The outside and inside walls, etc., are left down to a point four feet below the coal-floor line of the ordinary continuous kiln, the arch only being built above this line.

There are no BAGS or BAG WALLS to take down and rebuild when the kiln doors are opened and sealed up.

Has no complicated system of flues.

Has no complicated system of GAS PRODUCERS.

Can be arranged for utilizing the surplus heat with a blower, no chimney being required in this case.

This system applied to a HOFFMAN KILN will increase its capacity at least 100 per cent.



WILLIAM A. BUTLER, Patentee, 34 Parkside Ave. San Francisco, Cal.

The Toledo Coal & Clay Co., Toledo, O., has reduced its capital stock from \$500,000 to \$140,000.

The Portsmouth (O.) Harbison-Walker Co. has reduced its capital stock from \$600,000 to \$10,000.

The Lyth Tile Co., Buffalo, N. Y., has been incorporated, with \$150,000 capital stock, by Samuel E. Lytle and others.

Contracts have been awarded for the doubling of the capacity of the plant of the Diamond Fire Brick Co., Canon City, Colo.

Elbridge A. Flanders, of North Dexter, Maine, will establish a brick works at Dexter on the site of the old Dunham Brick Yard.

The plant of the Blast Furnace Fire Brick Works at Sciotoville, O., has been razed. It was the property of the Harbison-Walker Refractories Co.

The Wooster (O.) Clay Products Co. has been incorporated with \$20,000 capital stock, by I. J. Harris, N. H. Harris, R. S. Rogers, L. Fishel and W. S. Levens.

The Pacific Clay Co., owned by Oakland, Cali., people, has purchased twenty-five acres of clay land at Vallejo, Cali., near the Hyfire Clay Co.'s plant, and will build at once.

The president of the Lewiston (Idaho) Commercial Club reports that a company is being formed to build a large brick plant on the Snake river, to cost \$35,000; also a cement plant that will cost \$300,000.

The Peninsula (O.) Face Brick Co. has been incorporated, with \$60,000 capital stock, by I. M. Justice, S. D. Parker, F. R. Ormsby, E. C. Chambers and G. W. Auten. The main office will be in the Hamilton Bldg., Akron, O.

The Hocking Valley Fire Clay Co., Nelsonville, O., has increased its capital stock from \$7,500 to \$100,000.

The Central City (Ia.) Brick & Tile Co. plant has been sold to J. C. Latshaw, of Wisconsin. A. E. Rickerd will manage the plant.

The plant of the International Brick & Construction Co., Boise, Idaho, is now turning out 40,000 brick daily. J. G. McDonald is superintendent.

The New Castle (Colo.) Portland Cement Co. has been incorporated, with \$60,000 capital stock, by J. C. Coryell, John W. Ritter and Bert Grigon.

The Ashville (O.) Brick Co. contemplates putting in new brick machinery of modern pattern so as to keep up with the demand. S. M. Lewis is the proprietor.

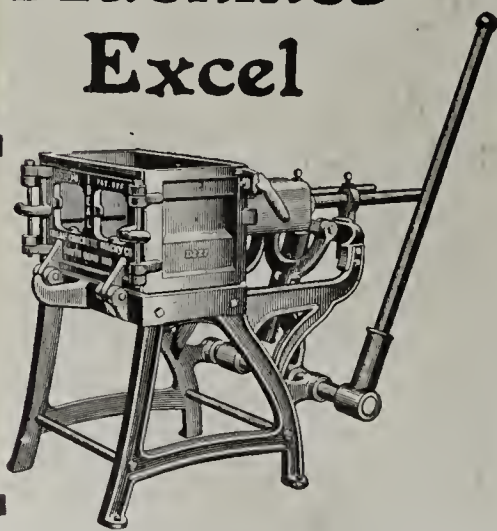
The Las Cruces (N. Mex.) Brick Co. has been incorporated with \$25,000 capital stock. Incorporators are J. M. McHenry, B. L. Berkey and M. H. Peterson.

The Central Sewer Pipe & Supply Co., Steubenville, O., has been incorporated, with \$10,000, by H. W. Irons, W. R. Stark, H. H. Smith, D. J. Sinclair and B. S. Pope.

The Gem Clay Forming Co., Newell, W. Va., has been incorporated with \$10,000 capital stock. Incorporators are B. H. Green, S. C. Albright and H. D. Weaver, all of East Liverpool, Ohio.

The Wilpicoba Clay Works, Ragland, Ala., is building a plant for the manufacture of building and paving brick. J. R. Wilkinson is president; C. H. Pittman, vice president and manager; A. L. Collard, secretary and treasurer, and A. H. Banker, general counsel. General office, 416 Peters Bldg. Atlanta, Ga.

Why IDEAL Machines Excel



The "Down-face" principle of the Ideal Concrete Block Machine permits the only practical use of rich facing material with coarser material in back of block. This principal is protected by a basic patent. No other machine using it can be legally made, sold or used.

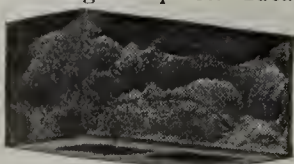
IDEAL

(INTERCHANGEABLE)

Concrete Machines

VARIOUS SIZES

Safe to buy because it is the original and only protected "Down-face" machine. Attachments and accessories will always be obtainable.



Ideal Block showing natural stone effect. Same machine produces endless variety of designs.

Profitable to own, because, it produces blocks, not only at lowest cost, but of a uniform excellence of quality that commands highest price. Ideal Concrete Blocks are salable anywhere and everywhere at splendid profits.

Wonderfully rapid and economical to operate, because of its extreme simplicity. Not a wheel, cog, chain or spring in its construction.

Magnificent illustrated catalogue of the entire Ideal line, a practical encyclopædia of cement block manufacture, sent free on application.

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BLOCK, BRICK AND SILL MACHINES. MIXERS, ORNAMENTAL MOULDS, ETC.

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All Mineral, Animal and Vegetable Matter.

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue W. C.

American Process Co.,
62-64 William St. NEW YORK CITY

Peter Verigin, of Yorkton Sask., Can., has bought land and will build a brick making plant.

A. W. Winegar, Burlington, Colo., has decided to put in a brick works and has ordered the machinery for same.

Machinery for the Leesburg (N. J.) Brick Co. has arrived at Millville and brick will be made within the month.

The plant of the Blackwell (Okla.) Brick & Tile Co. is about ready for business. The machinery is all placed with the exception of the repress. The present capacity of the plant is 60,000 brick daily.

The Pearl Clay Products Co., Bradford, Pa., has been incorporated, with \$200,000 capital stock, by W. M. Hodges, F. P. Shoemaker, C. E. Foster, G. W. Foster and James P. Ryan, all of Bradford.

The Atlas Portland Cement Co. has bought 680 acres of land at New London, Mo., which is underlaid with limestone and shale, the limestone testing 98 per cent pure. It is understood they will build a plant on the land.

The Kramb Brick & Tile Co., Oak Harbor, O., has been organized and purchased the Ezra Fetterman works and with added machinery, will soon begin the manufacture of brick and tile under the management of A. E. Balin.

The Manteno (Ills.) Brick Co. recently elected officers as follows: Dan G. Lee, president; George Hatch, vice president; G. W. W. Jackson, secretary; Otto Weber, treasurer; John P. Hatch, director. The company showed earnings of 5 per cent for the first year, which is considered good, as brick were made at a loss up to seven weeks ago.

The Fort Dodge (Ia.) Clay Works will be sold at public sale June 29th.

Antone Koller has sold out his interests in the brick yard at Pana, Ill., to John Ide, who will conduct the yard in the future.

The Oaktibbe Brick Co., Meridian, Miss., has been incorporated, with \$15,000 capital stock, by William Richardson and Chas. B. Woods of Pittsburg.

The Cedar Creek Brick Co., Fish Pond, Ala., has been incorporated with \$4,000 capital stock. Incorporators are W. W. Downing George Miller and Geo. F. Arnold.

The Conyngham (Pa.) Brick Co., which was formed a year ago, has leased four farms in Black Creek township, and it is their intention to put up a brick and terra cotta works.

The Earl Park (Ind.) Tile & Brick Co. has been incorporated with \$15,000 capital stock. Directors are F. H. Meier, H. L. Cohen, Jeremiah Dugan and Christ Christiansen.

Immense deposits of kaolins and light-buff burning clays are being opened by E. A. Hail, Geo. H. Wilson and others. A complete equipment of mining and brick machinery will be purchased by Prof. J. F. Elsom, of New Albany, Ind.

The Heron Lake (Minn.) Brick & Tile Co. has been incorporated, with \$35,000 capital stock, by C. K. Willard, of Mankato, A. C. Ochs of Springfield, and W. A. Ochs of Lamberton. The plant will be enlarged and managed by Mr. Willard, the vice president.

The Ideal Brick Kiln

SHOULD BE

Cheap and durable and have a big daily capacity.

In order to save fuel it should be of the continuous type.

To produce clean colored bricks without cracks, the preliminary drying should be performed in chambers separated from the burning compartment proper, according to the principle of the common up-draft kiln.

The heat from the already burned cooling bricks should preferably be used to lighten the burning proper.

The different stages of the burning process should always be easily observable. Such one is the

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One power Repress, in number one condition, used only but a short time; capacity 10000 per day. Ask for full particulars.
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Two American Clay Machinery Company's No. 23 combined brick machines, with repair parts sufficient to make machine first-class. Capacity 7500 to 10000 per hour. Greatest bargain. Write for particulars.
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One Chambers pug mill, practically new, sufficiently large for any output. A first class machine in every respect. Address
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Grant Park, Ills.

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Wanted Stoneware Potter—both wheel and Kiln men, Write to
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Clayton, Wash.

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A first-class tile and brick plant in best part of Iowa. Capacity 15000 brick or tile in proportion. Reason for selling, age. For particulars write to H. L. SWIFT, Riverside, Iowa

A GOOD INVESTMENT

Man with capital and experience to start Brick & Tile plant. Good clay, good location adjoining R. R. track. Large home demand for tile. For particulars write
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For Sale—75 Acres; 60 feet of shale, 10 feet of Fire Clay, 3 feet of Coal developed. Excellent conditions. Railroad track.
Price, \$15,000. Address,
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Terre Haute, Ind.

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Young man with experience wants position as manager or superintendent, stiff mud brick yard. Can bring men to fill all the important positions from foreman, burners and setters down. Willing to go anywhere. Best references.
Address R, Care CLAY RECORD,
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Corlis engines, 20x48, 18x36, 16x42, 12x36. Also 40 other sizes and styles in stock.
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Send specifications of your requirements and we will make you a proposition that will interest you.
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One Center Crank, 100 horse power Engine.
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One eight foot Frost Dry Pan, wood frame,
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Shafting, Pulleys and Belting. All in good working order and valued at over \$5000. Will sell same cheap. Immediately delivery
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Soft mud outfit manufactured by the American Clay Working Machinery Co., consisting of Upright Stock Brick Machines direct attached Pug Mill, Mold Sander, Brick Molds, 5 Leaf Dump Table, 10,000 Wooden Pallets. All in fine condition; very reasonable price. Apply to
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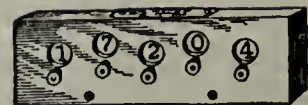
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We offer for sale at a sacrifice the following **BOYD Presses**

One 3 Mold Standard 1891 Pattern
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All in good condition. Inspection invited. Immediate shipment.

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5 Wheel, \$3.25
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By well known machinery manufacturer man competent to handle Sales Ledger and Credits and Collections. Applicant must have good habits and furnish best references. Address:
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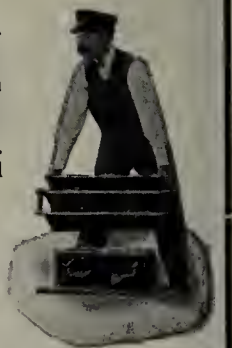
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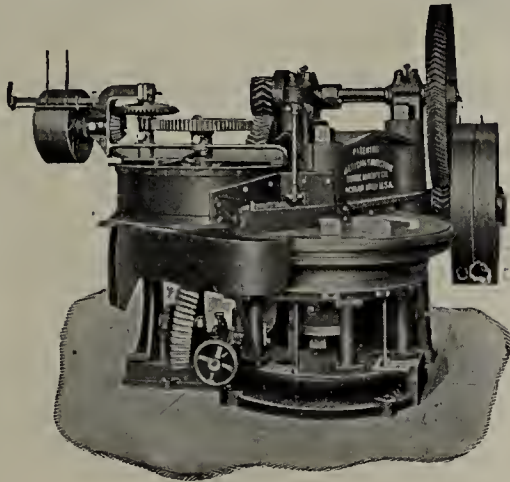
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Are now being built with extra table for making fancy brick,
on which double pressure is exerted.

Don't confuse our Practical System with the so-called
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Our plants are **installed under the supervision of Prac-
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Brick, Cement Brick and Blocks**

H. W. COSBY, Superintendent and General Manager.

South Boston, Va., January 19, 1907.

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Marion, Ind.

Gentlemen:—

As regards the Rust Clay Feeder we bought of you last year, will say
it has been in use in our branch yard at Houston, Va., since last July and
is giving **PERFECT SATISFACTION.** It practically saves us two men
besides doing the work **BETTER** and with **REGULARITY.**

The greatest trouble brick men have is getting hands to feed regu-
larly—they will over feed and choke the machine break or run belts off
and then sit down and rest while the owner labors to repair and start up
again. Your Clay Feeder is perfect and is indispensable to any brick
manufacturer who wishes to make a good brick at lowest cost.

Yours truly,

Signed by H. W. COSBY, Supt. and Gen. Mgr. **BOSTON BRICK CO.**

Marion Machine, Foundry and Supply Co.
Marion, Ind.

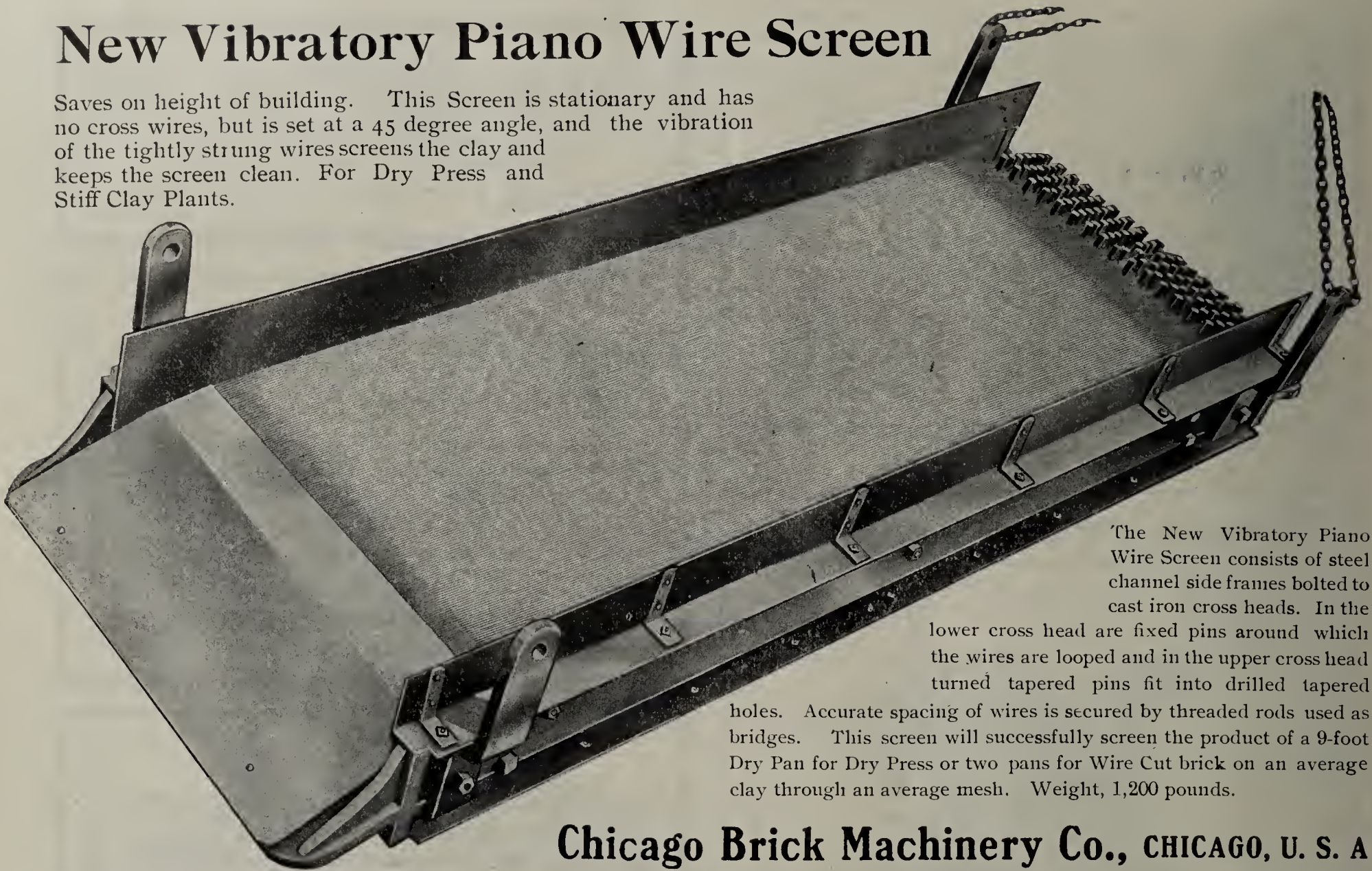
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Machines are sold throughout the entire United States without expense to us
and any one who engages in manufacturing can increase their sale largely by
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Saves on height of building. This Screen is stationary and has no cross wires, but is set at a 45 degree angle, and the vibration of the tightly strung wires screens the clay and keeps the screen clean. For Dry Press and Stiff Clay Plants.



The New Vibratory Piano Wire Screen consists of steel channel side frames bolted to cast iron cross heads. In the lower cross head are fixed pins around which the wires are looped and in the upper cross head turned tapered pins fit into drilled tapered holes. Accurate spacing of wires is secured by threaded rods used as bridges. This screen will successfully screen the product of a 9-foot Dry Pan for Dry Press or two pans for Wire Cut brick on an average clay through an average mesh. Weight, 1,200 pounds.

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FOR ALL USES.

LUMP, GRAIN AND GROUND

60-70% 70-80% 80-90% OXIDE.

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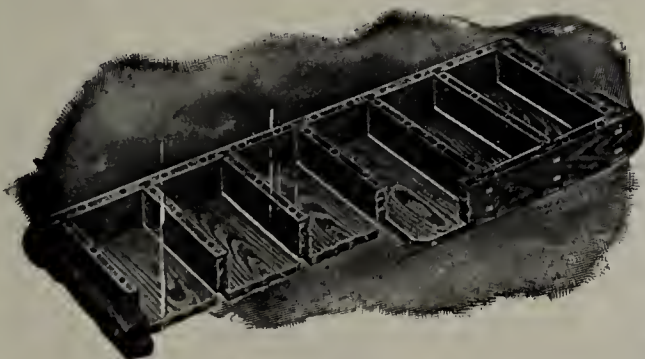
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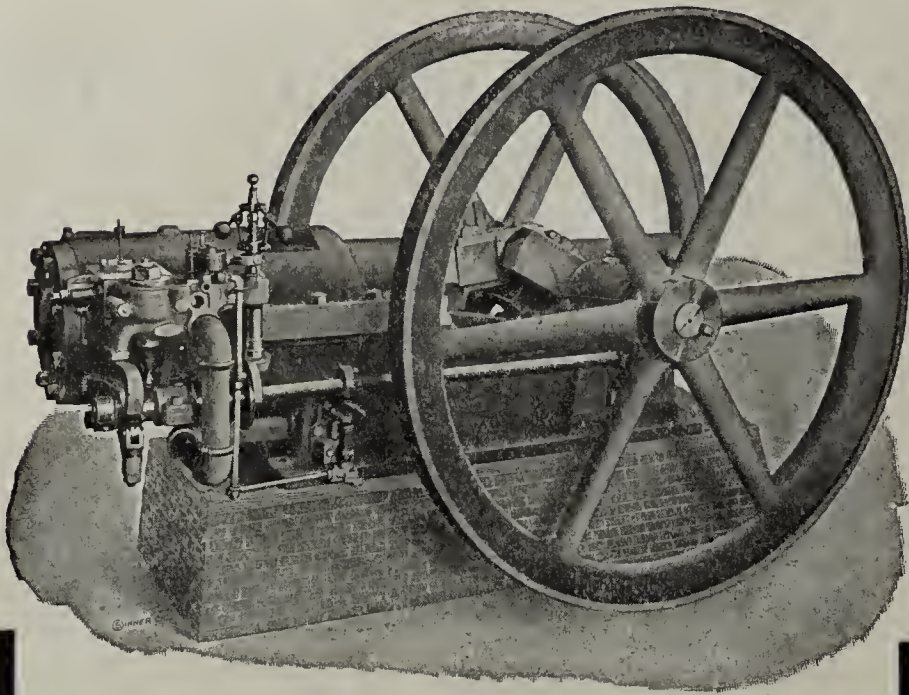
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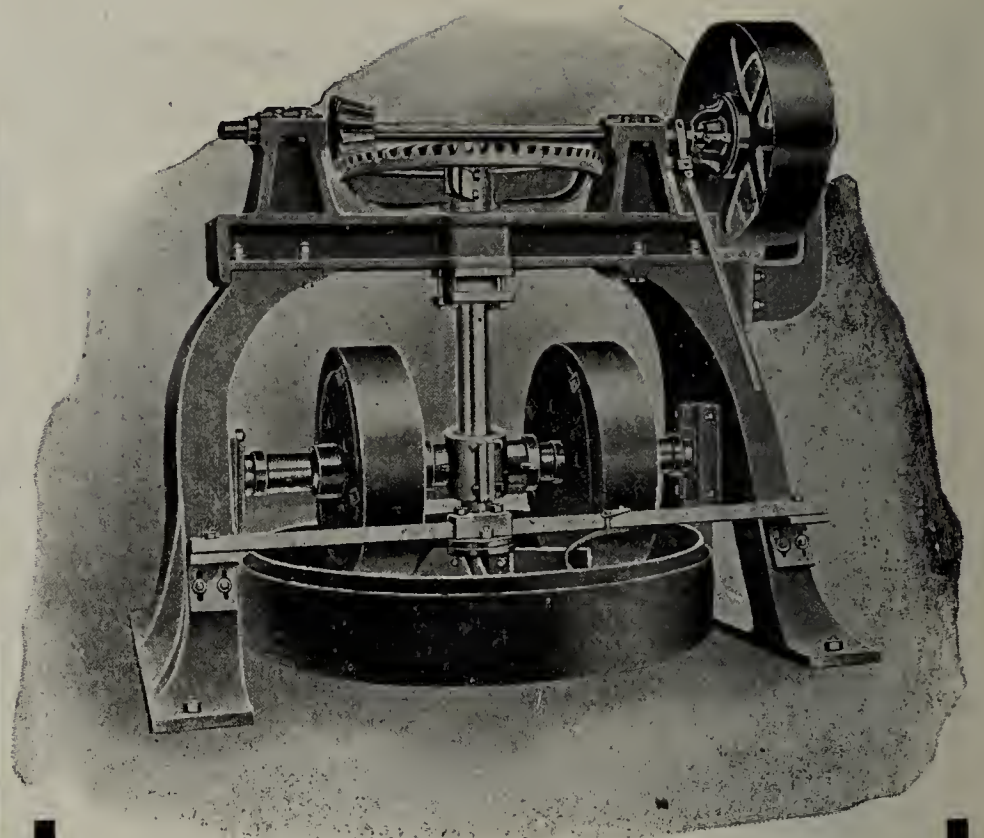


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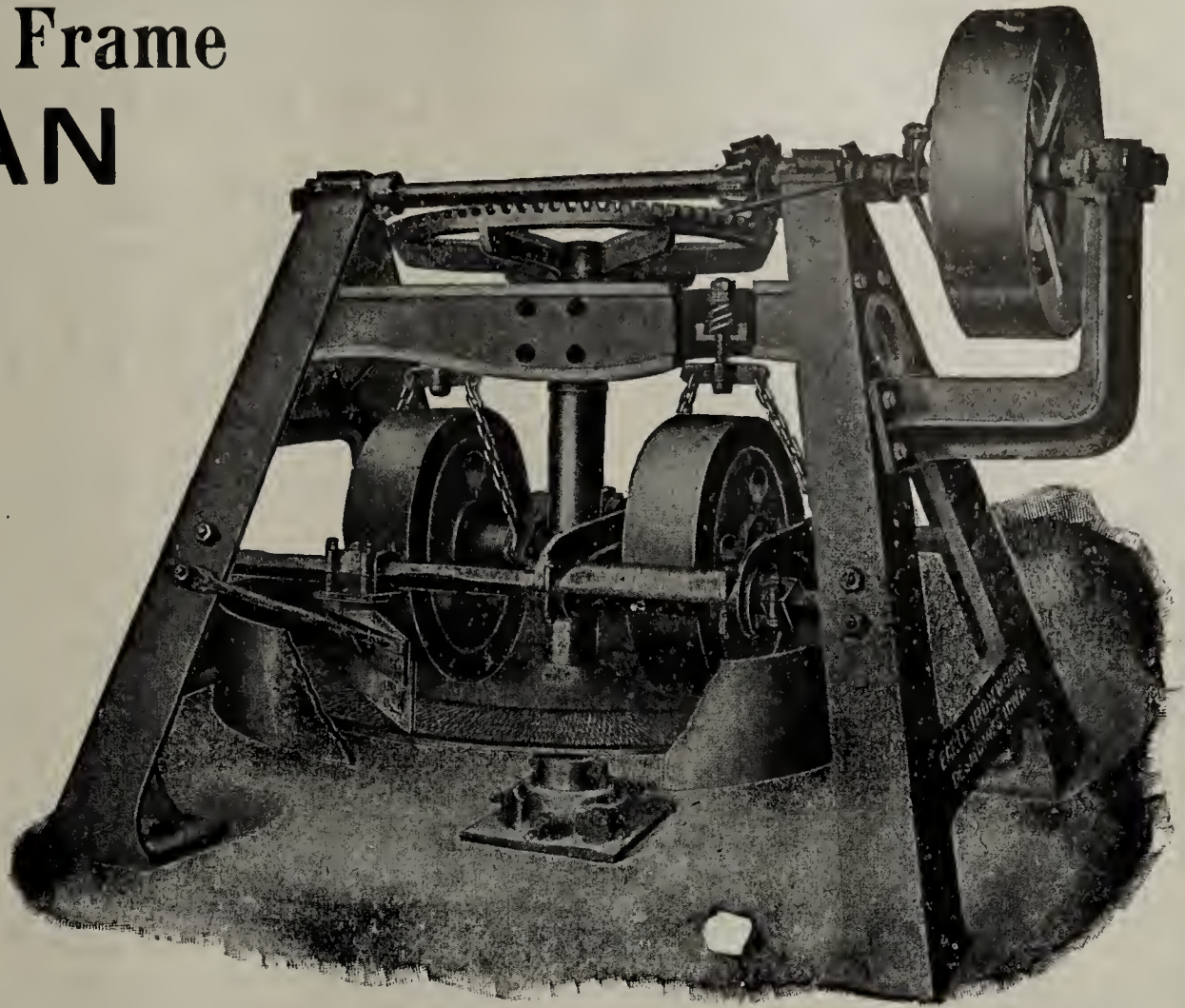
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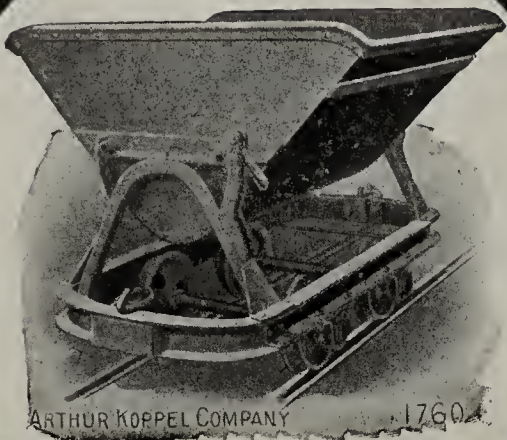
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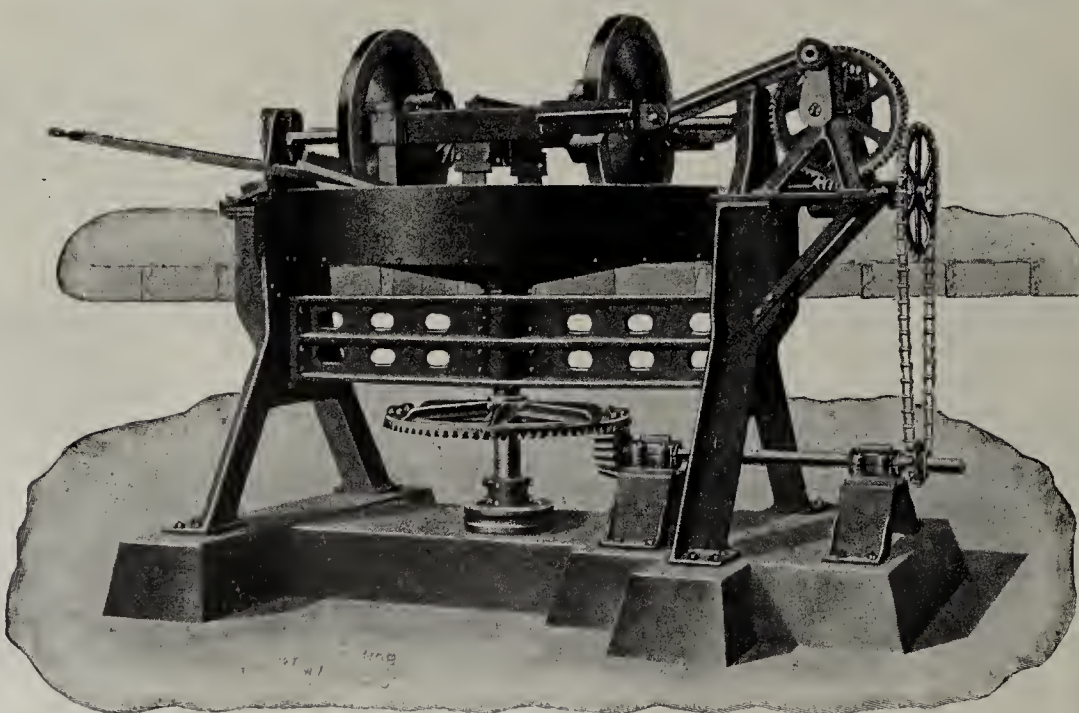
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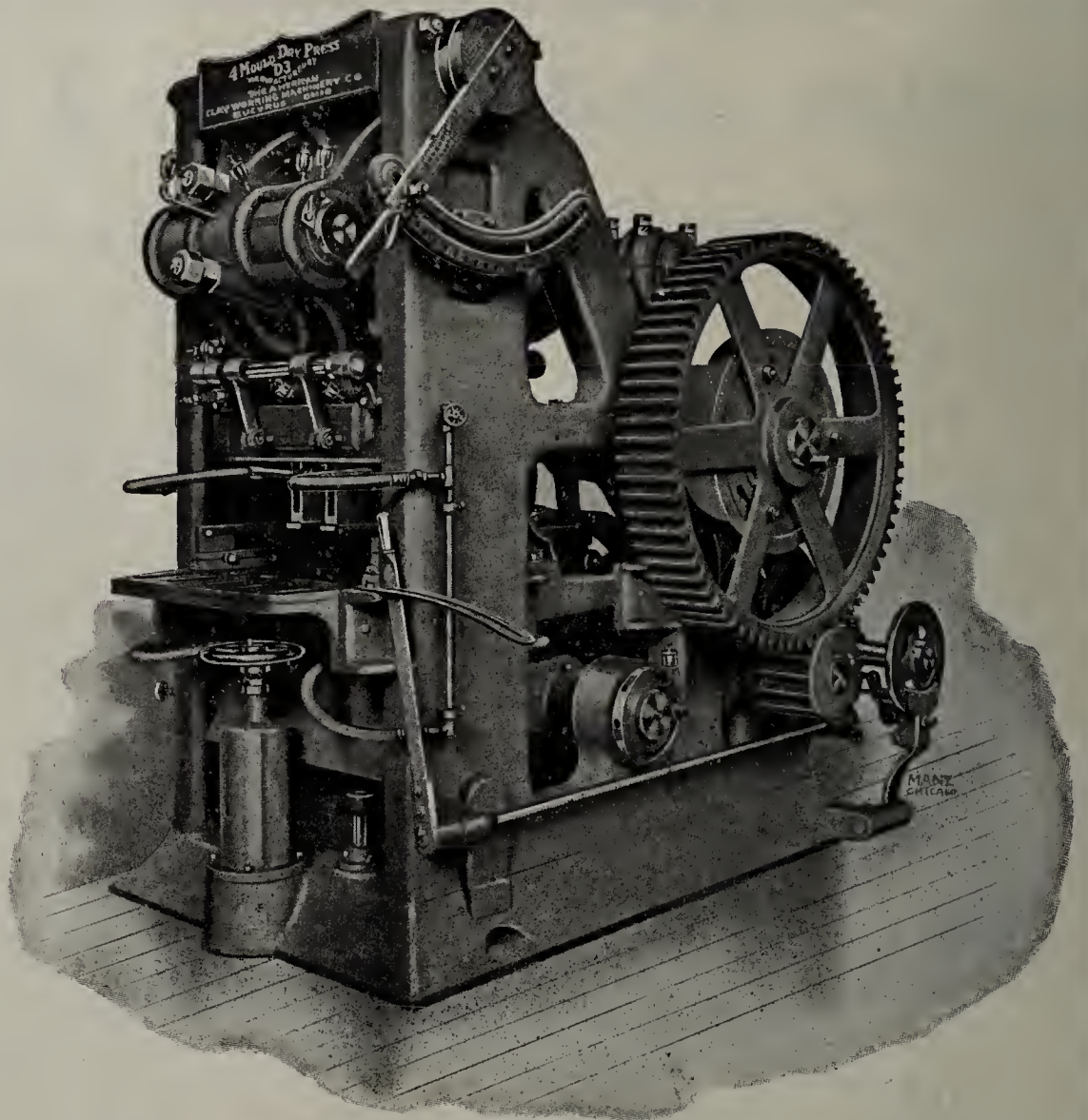
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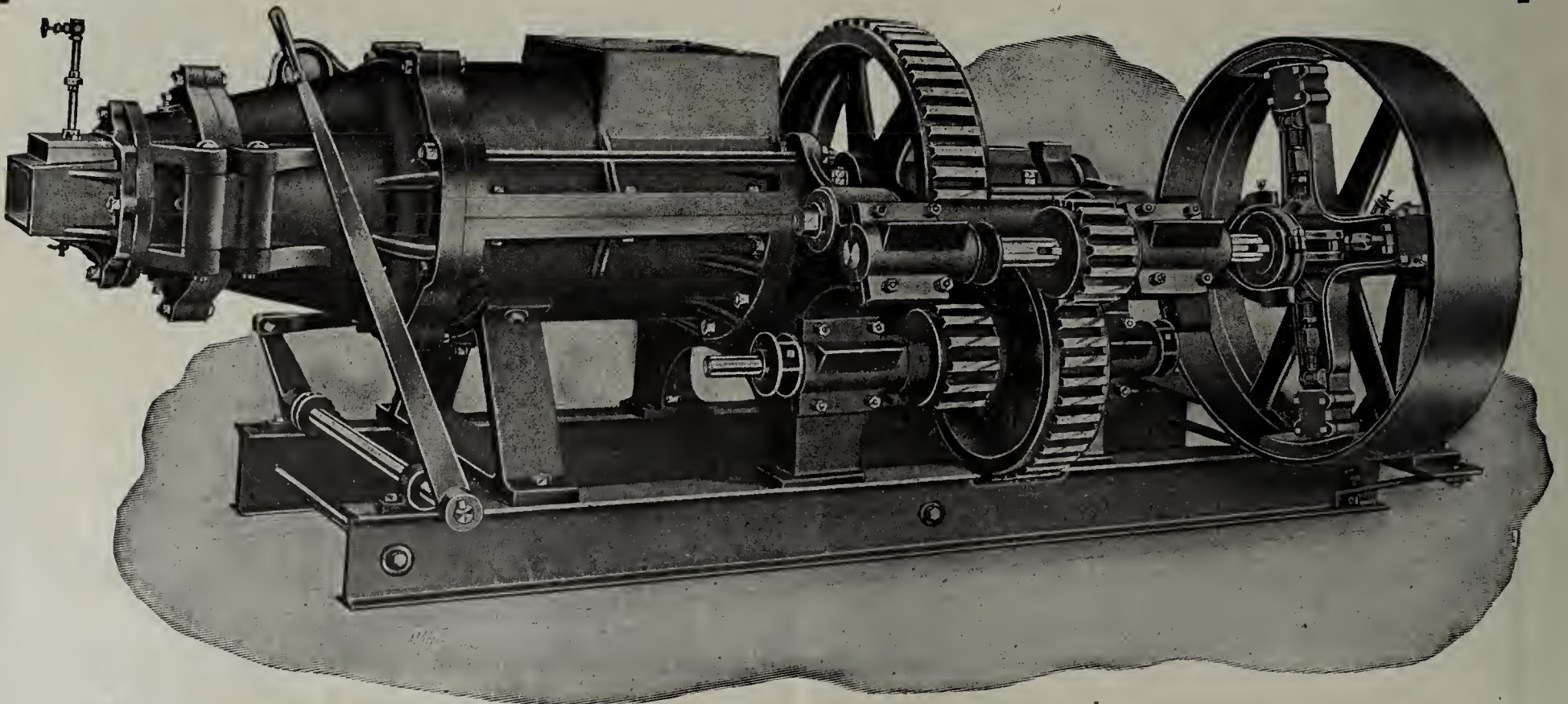
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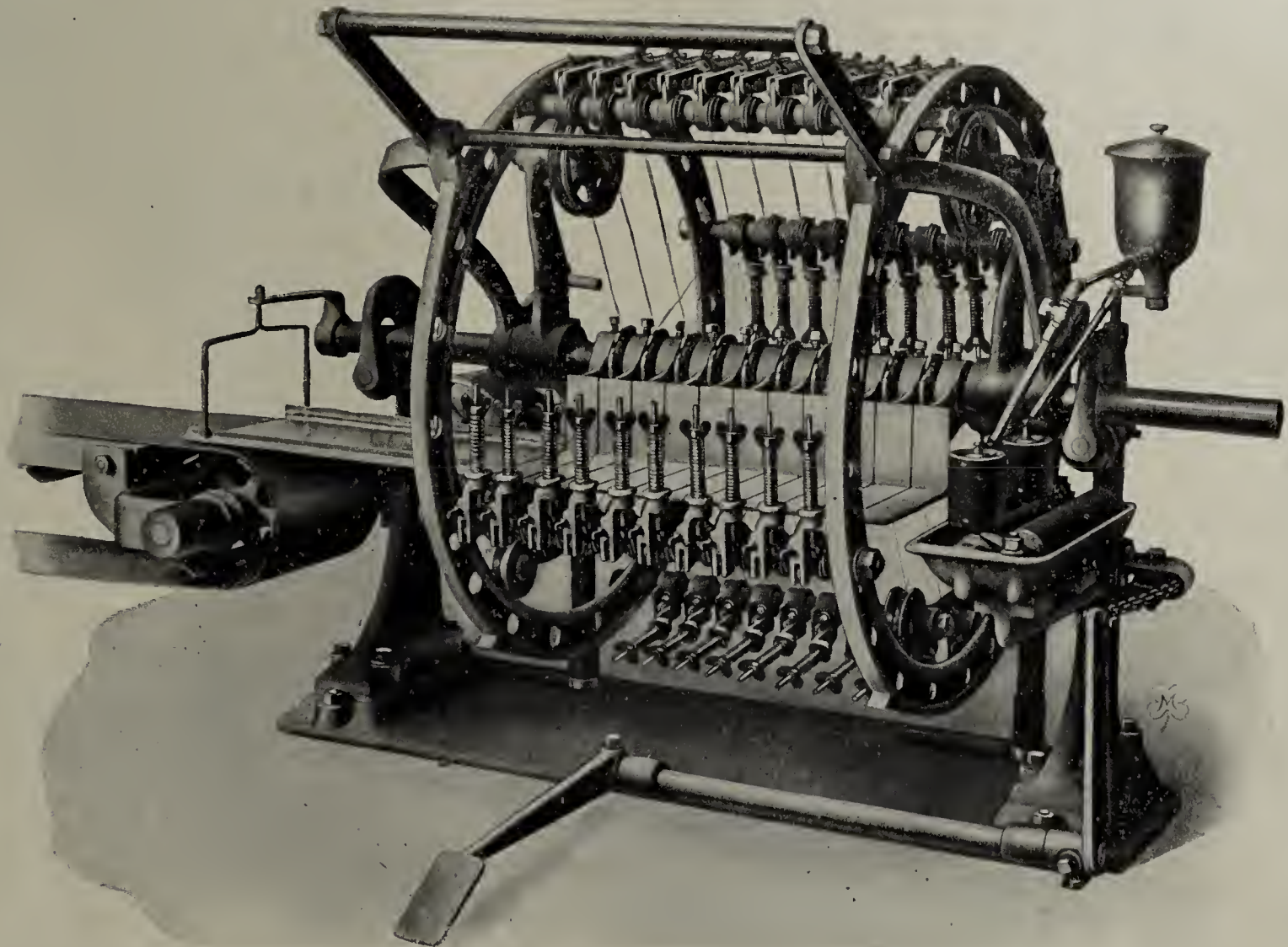


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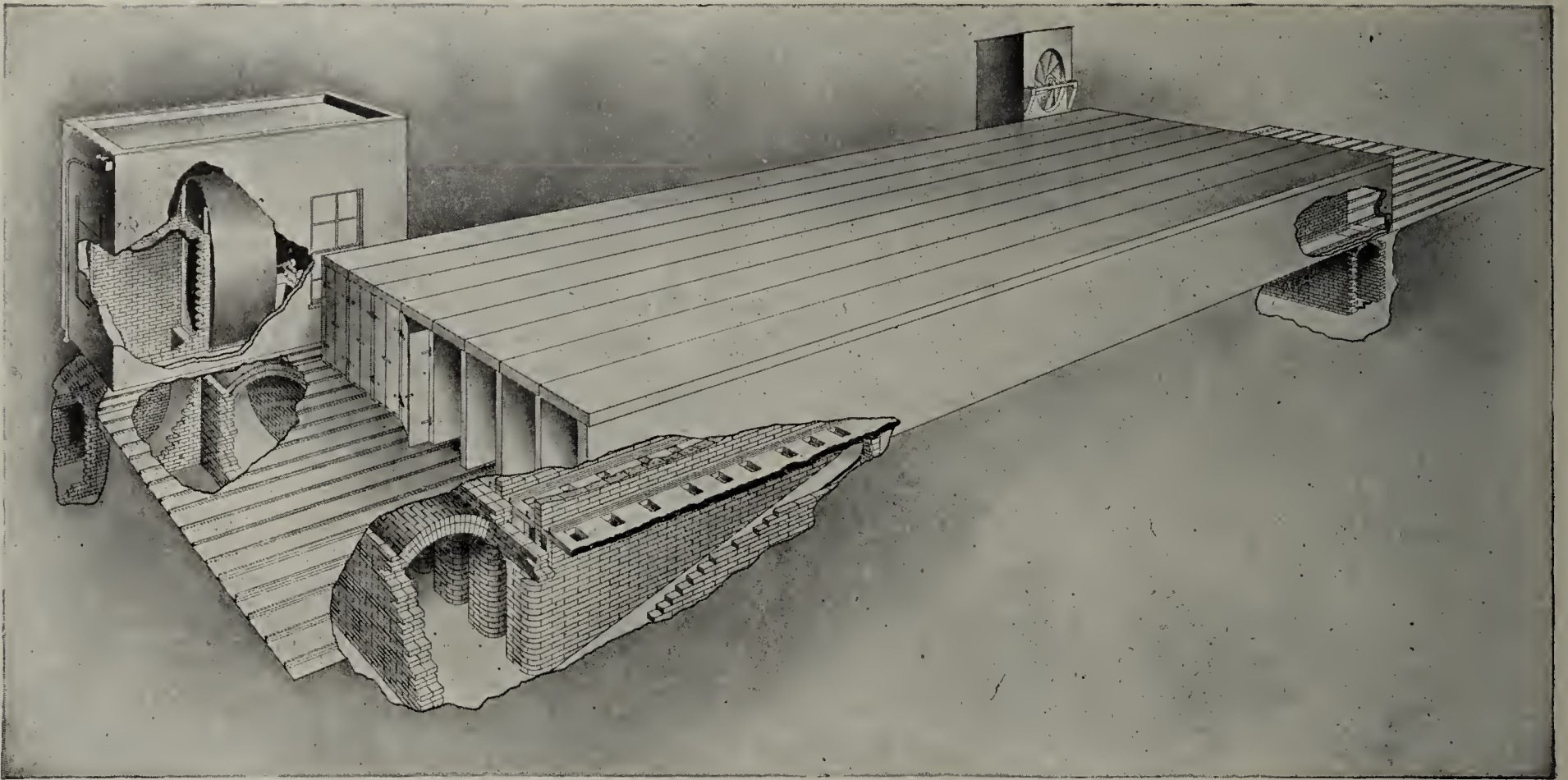
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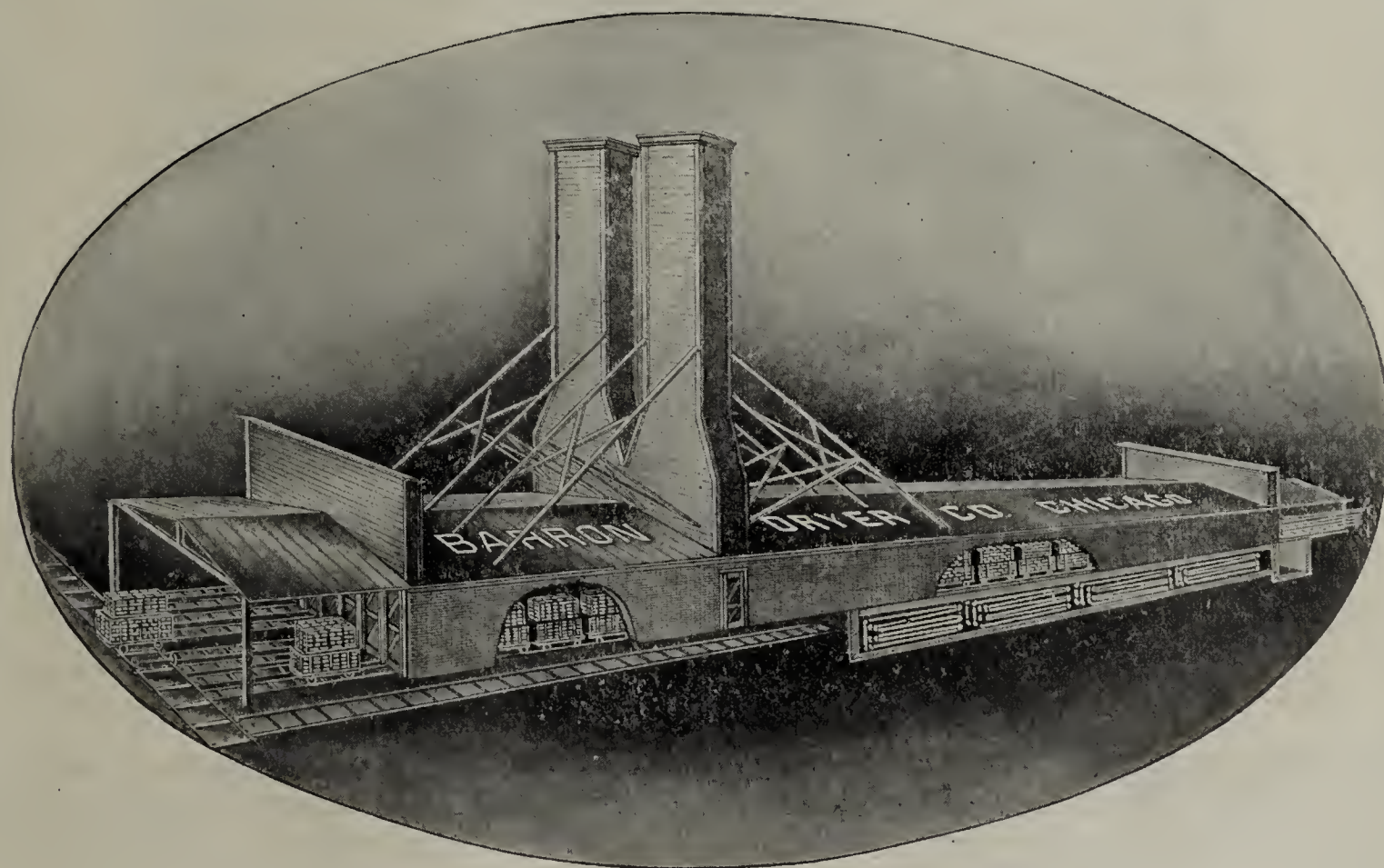
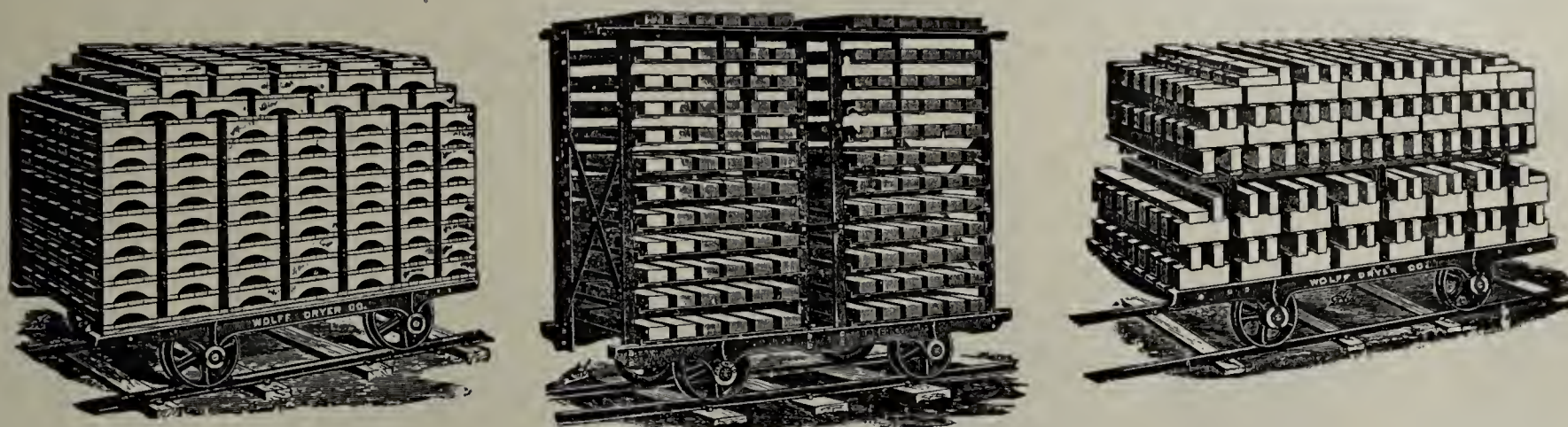
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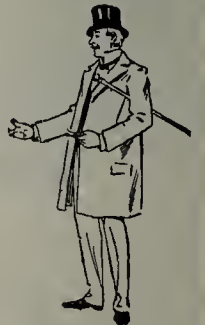
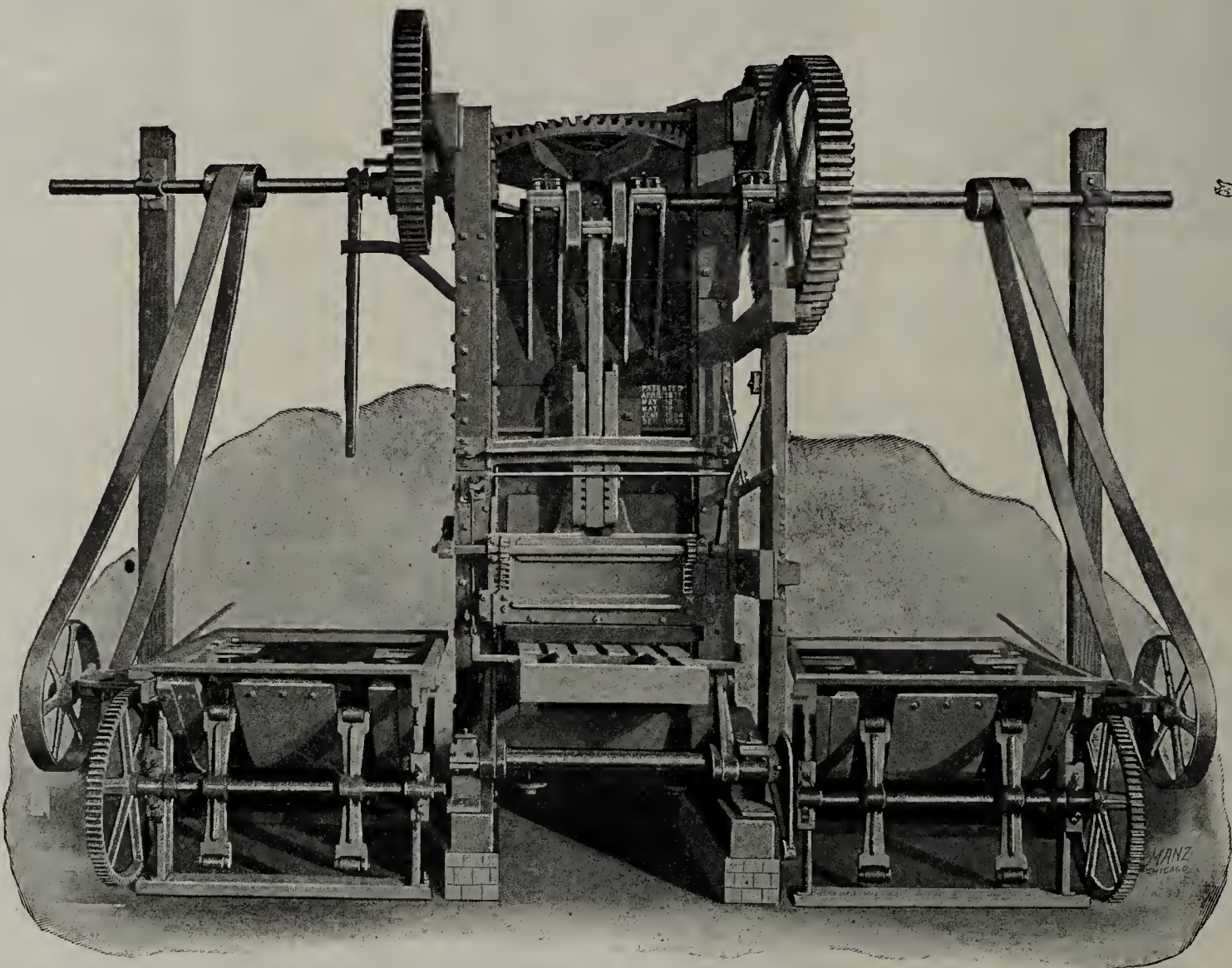
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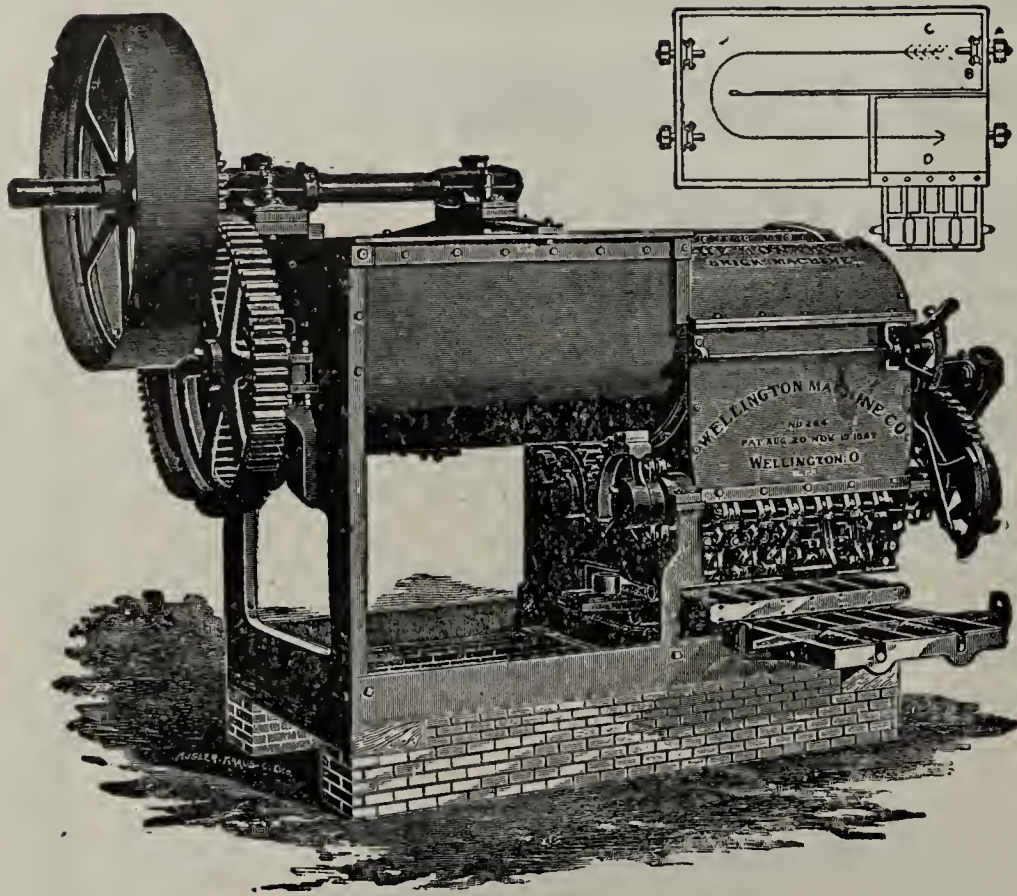
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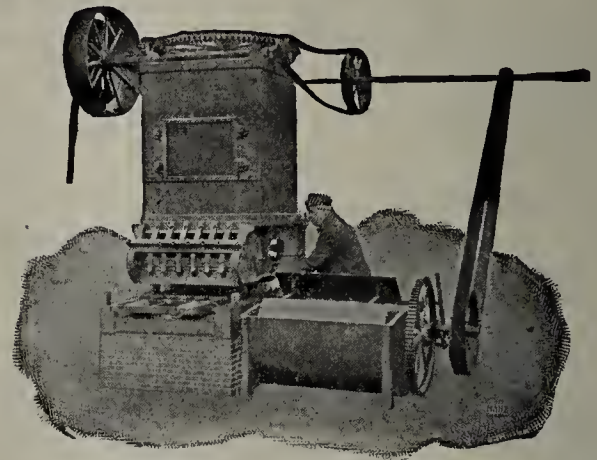
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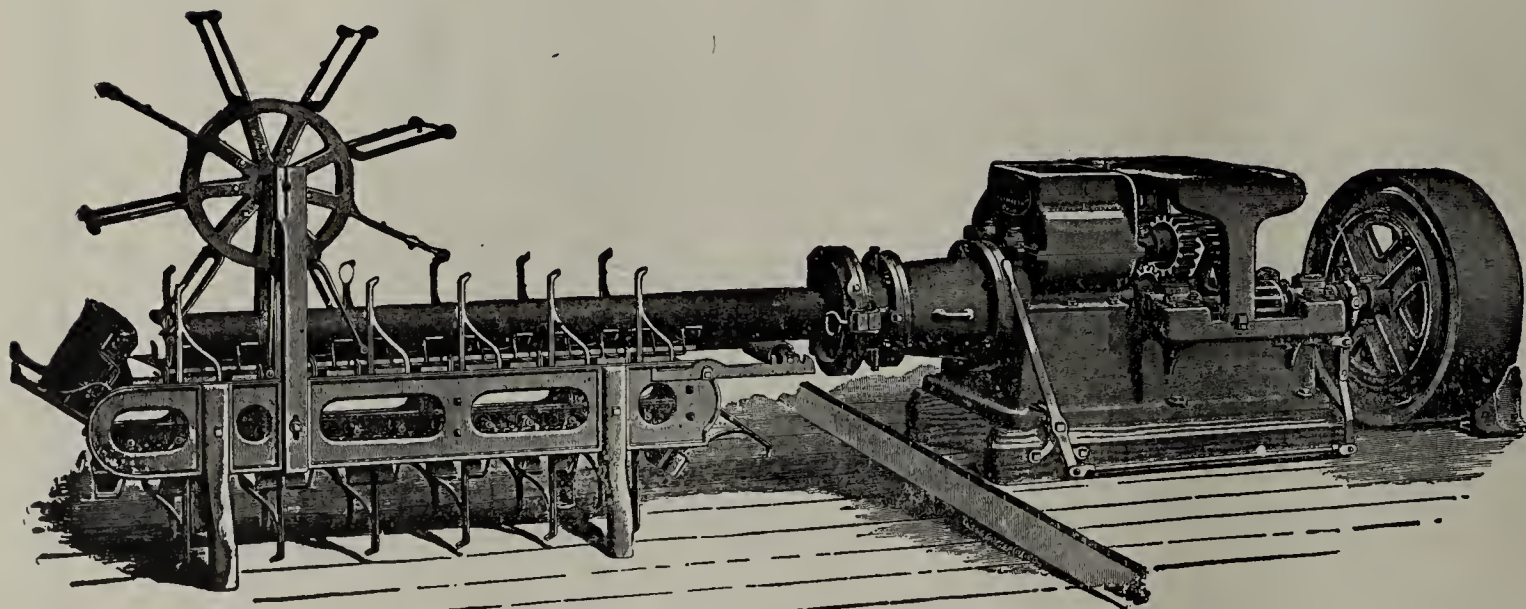
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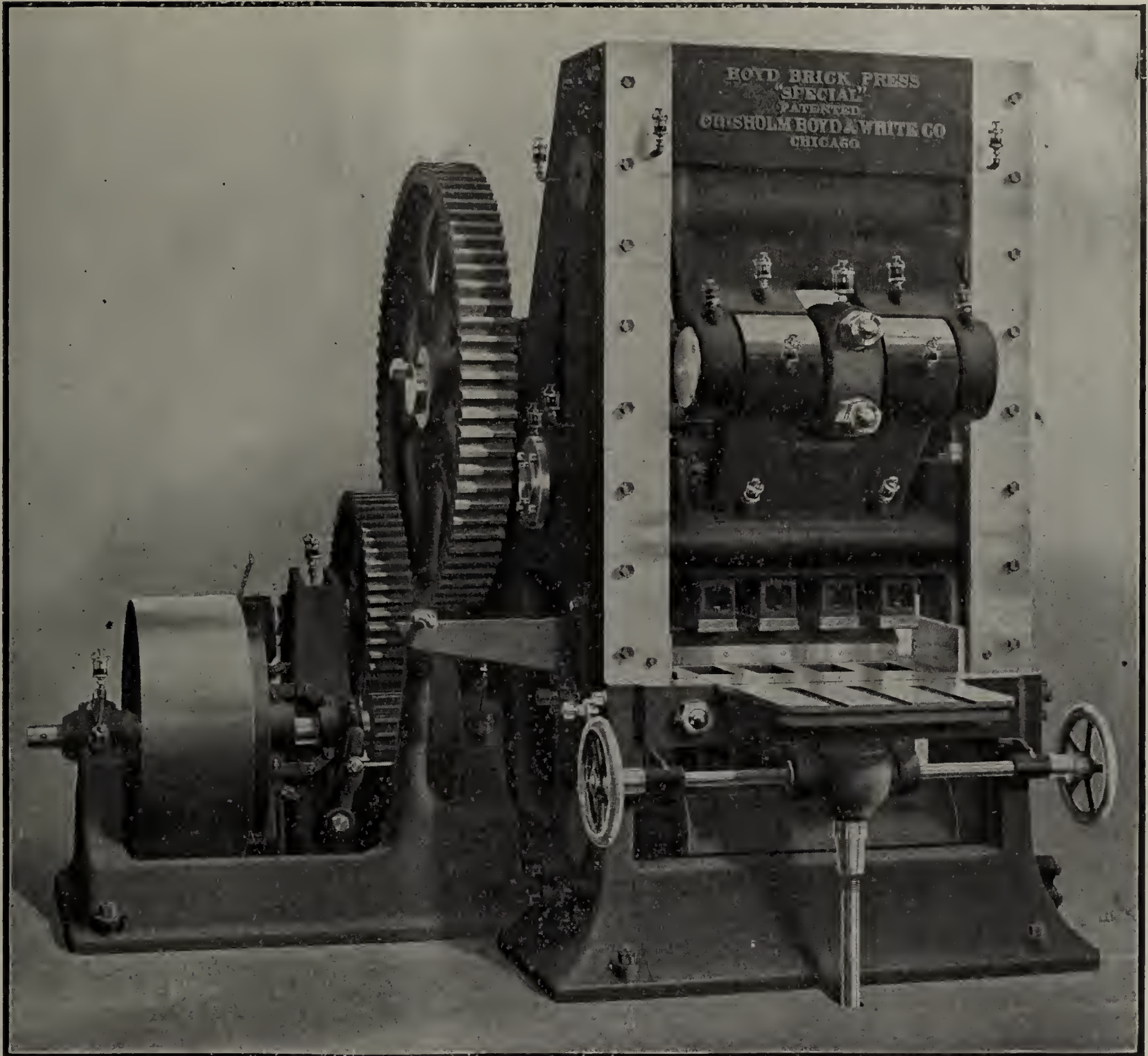
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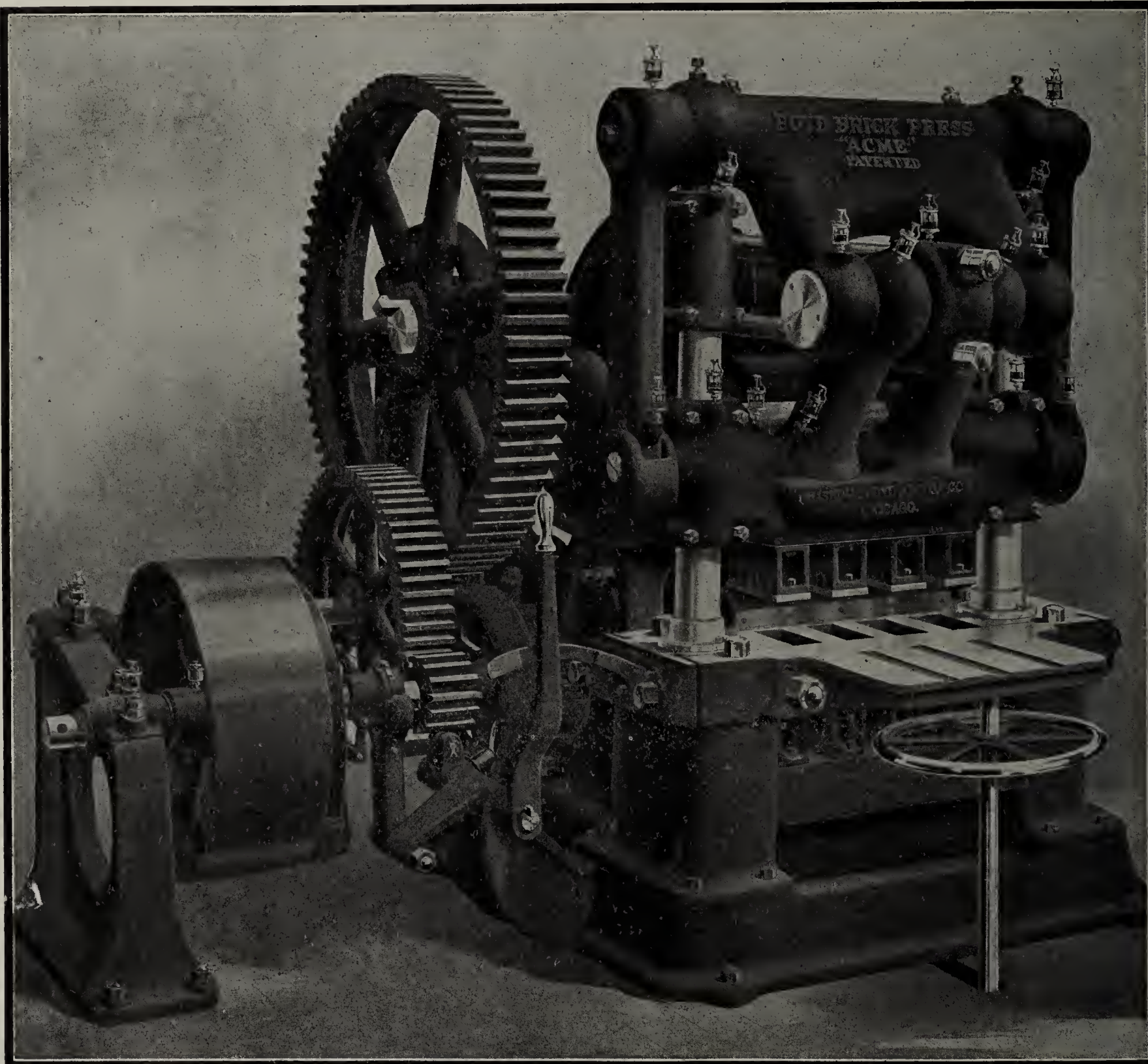
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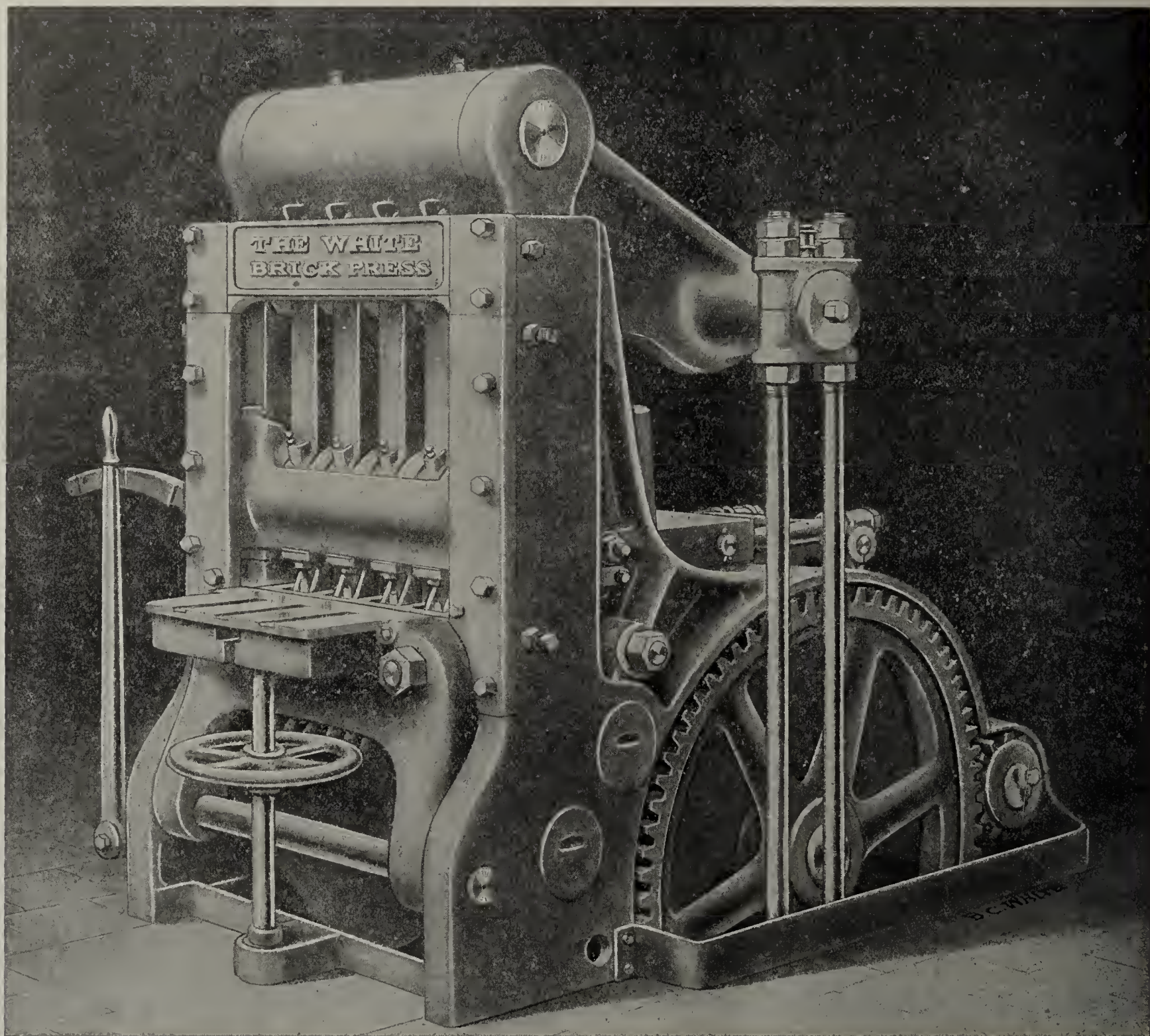
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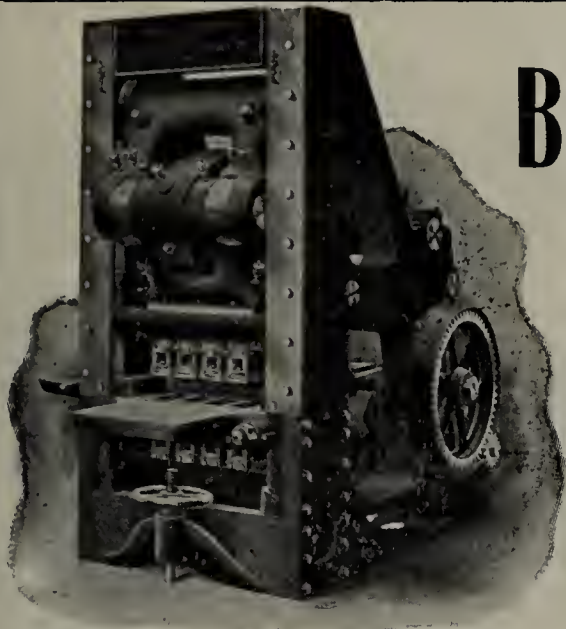
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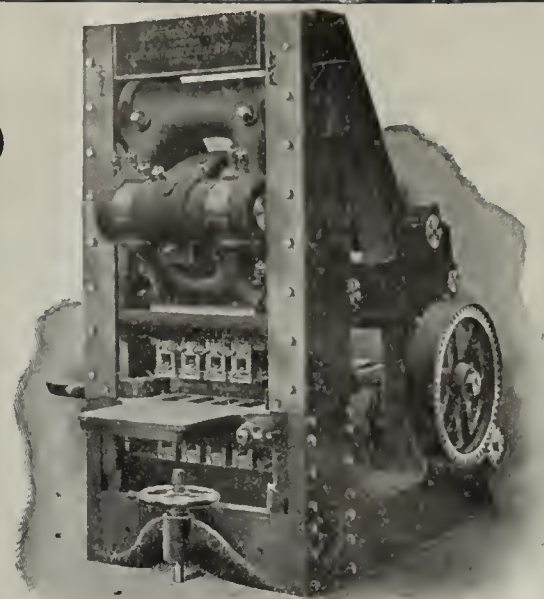
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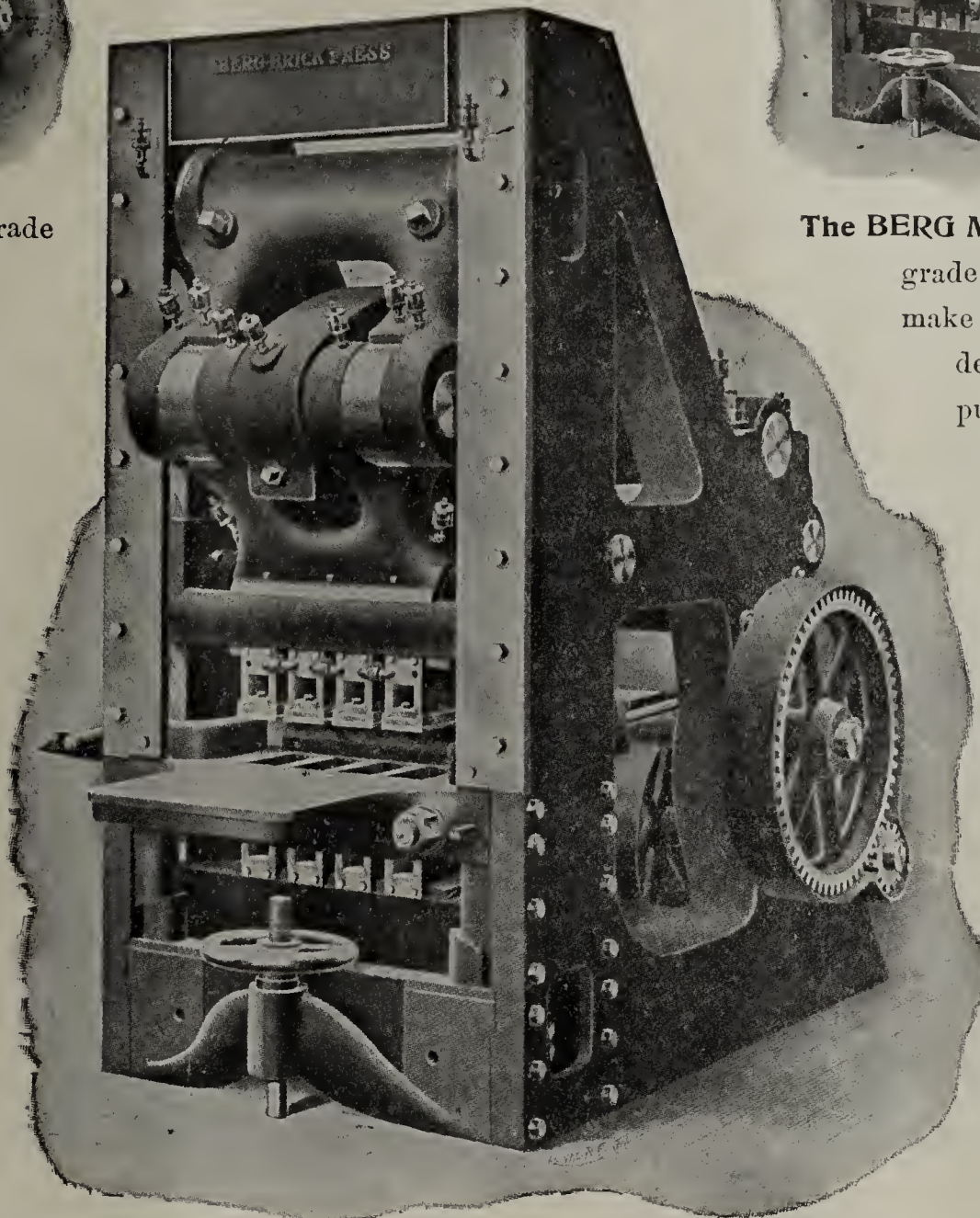


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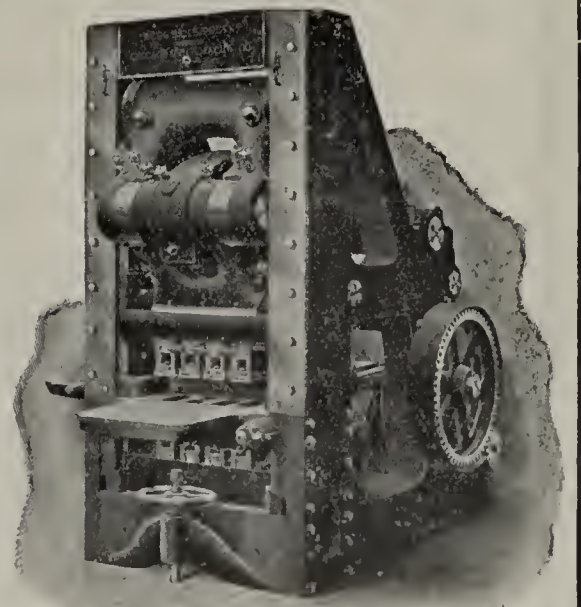
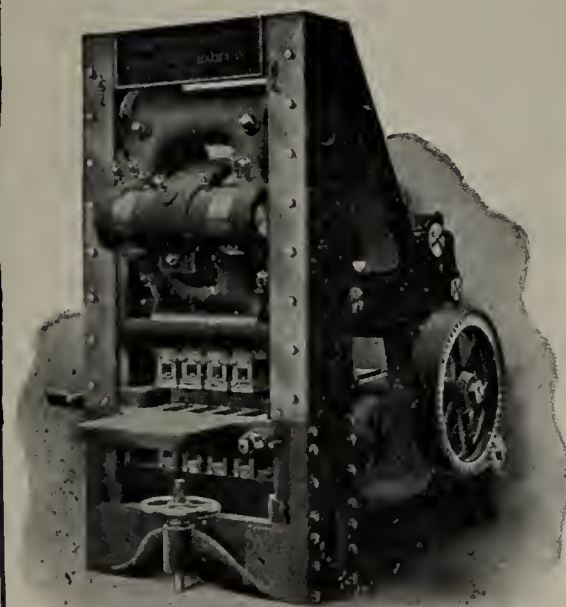
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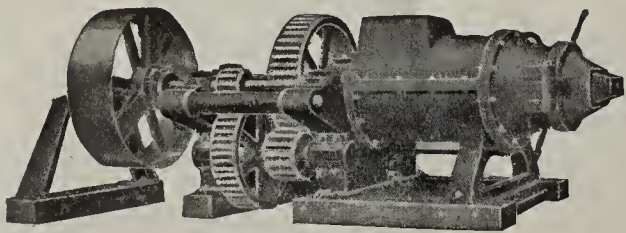
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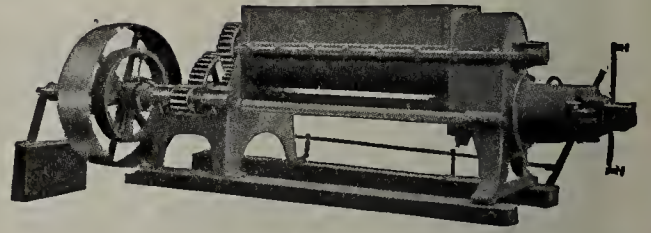
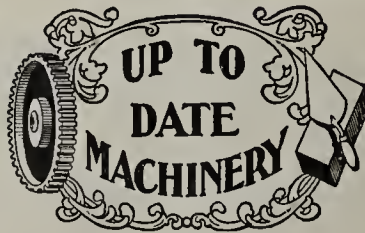
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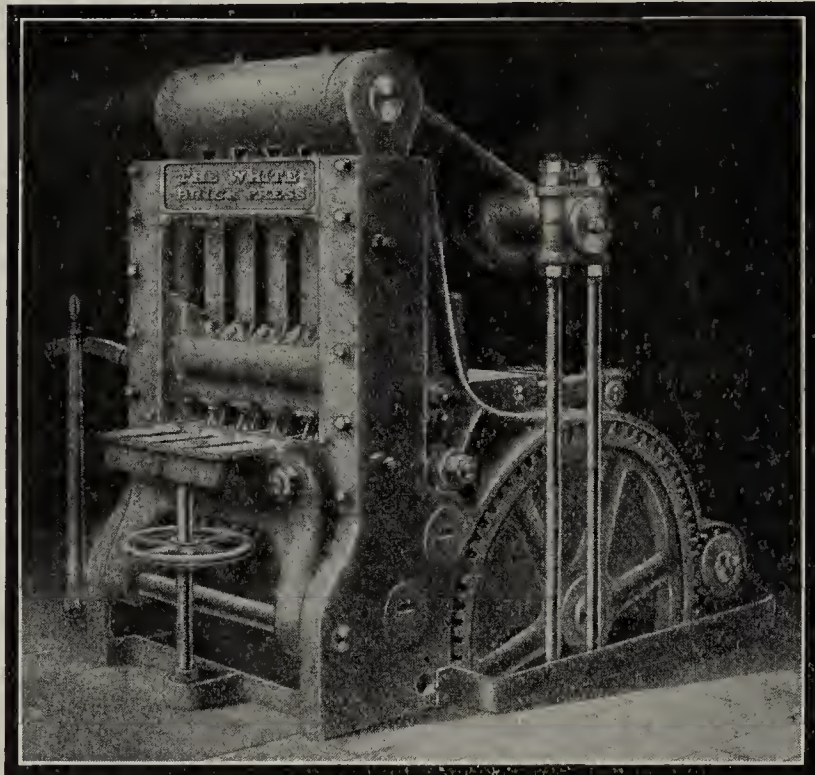
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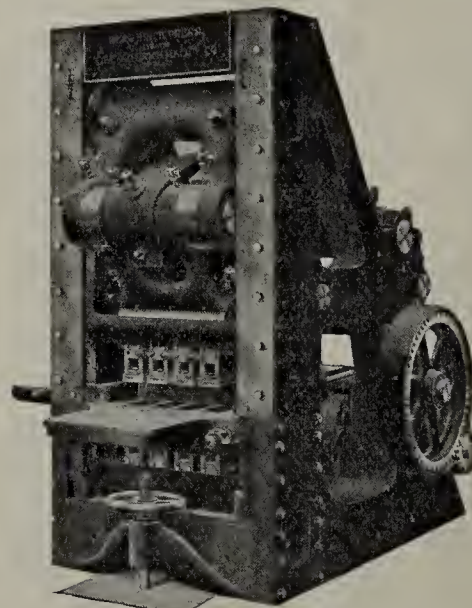
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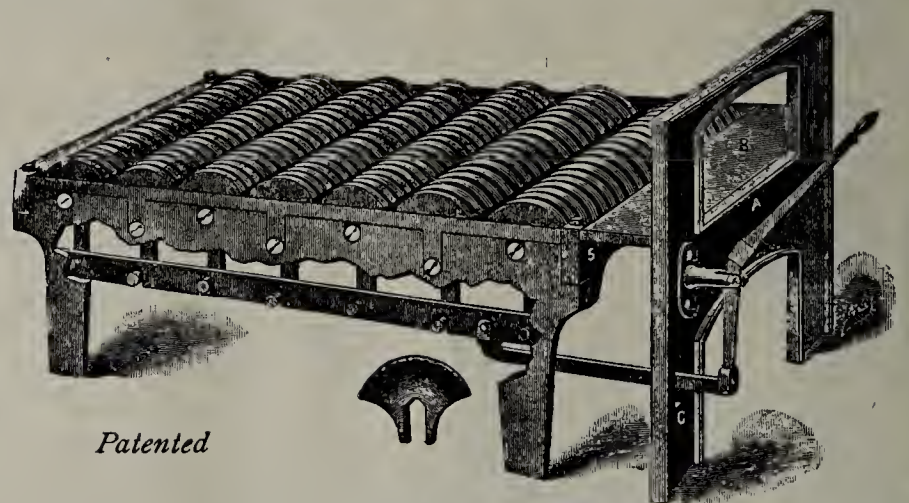
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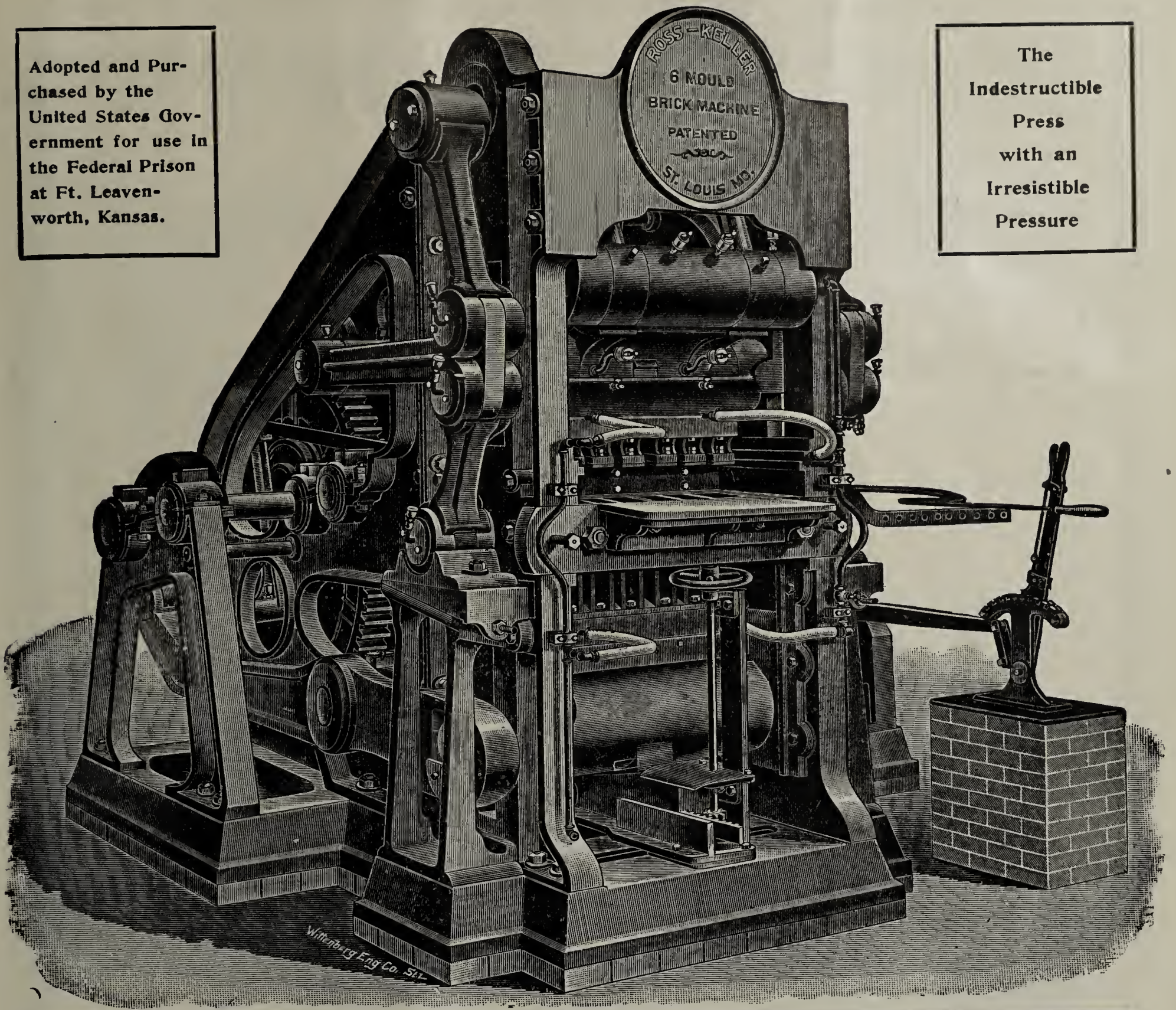
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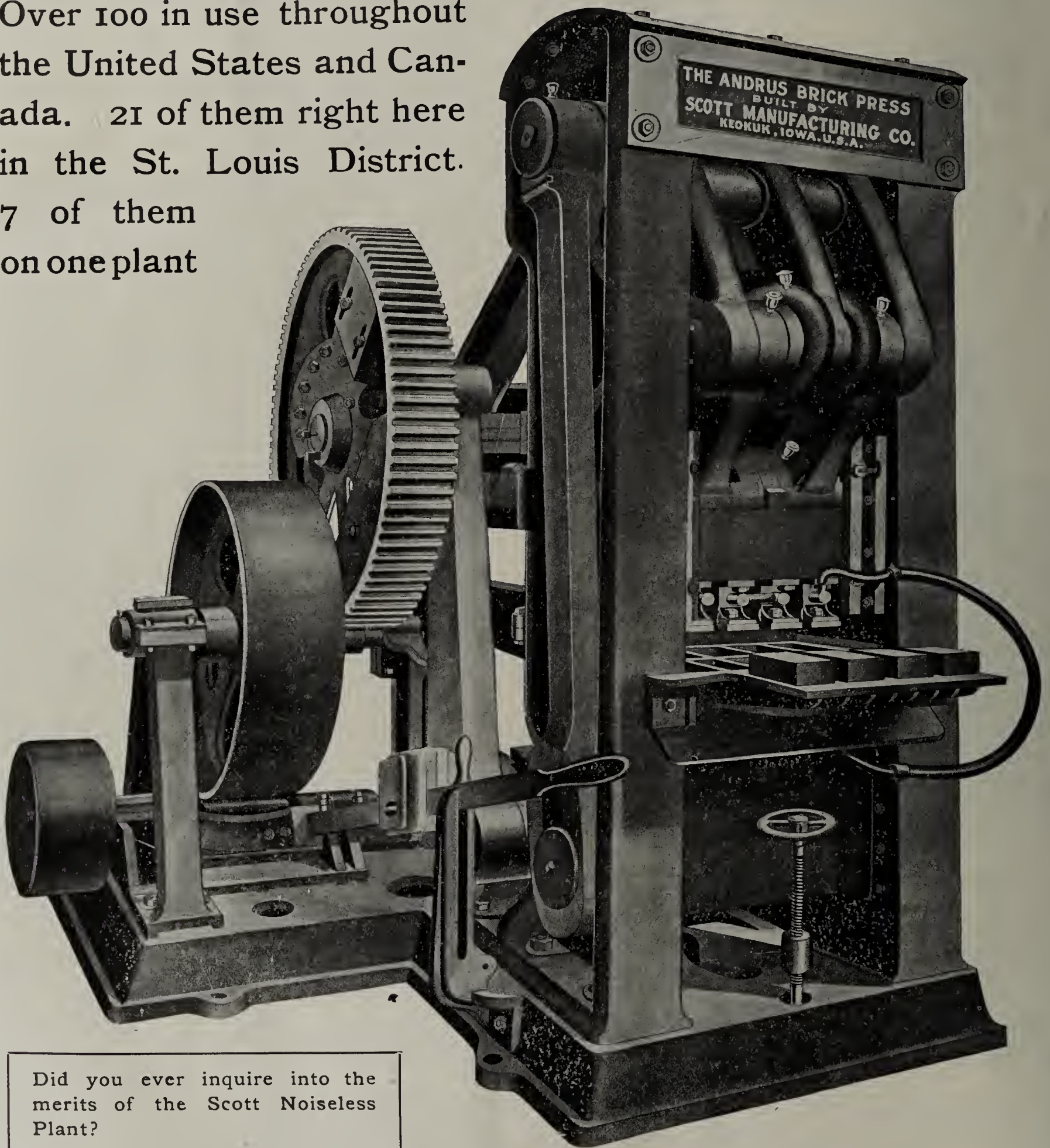
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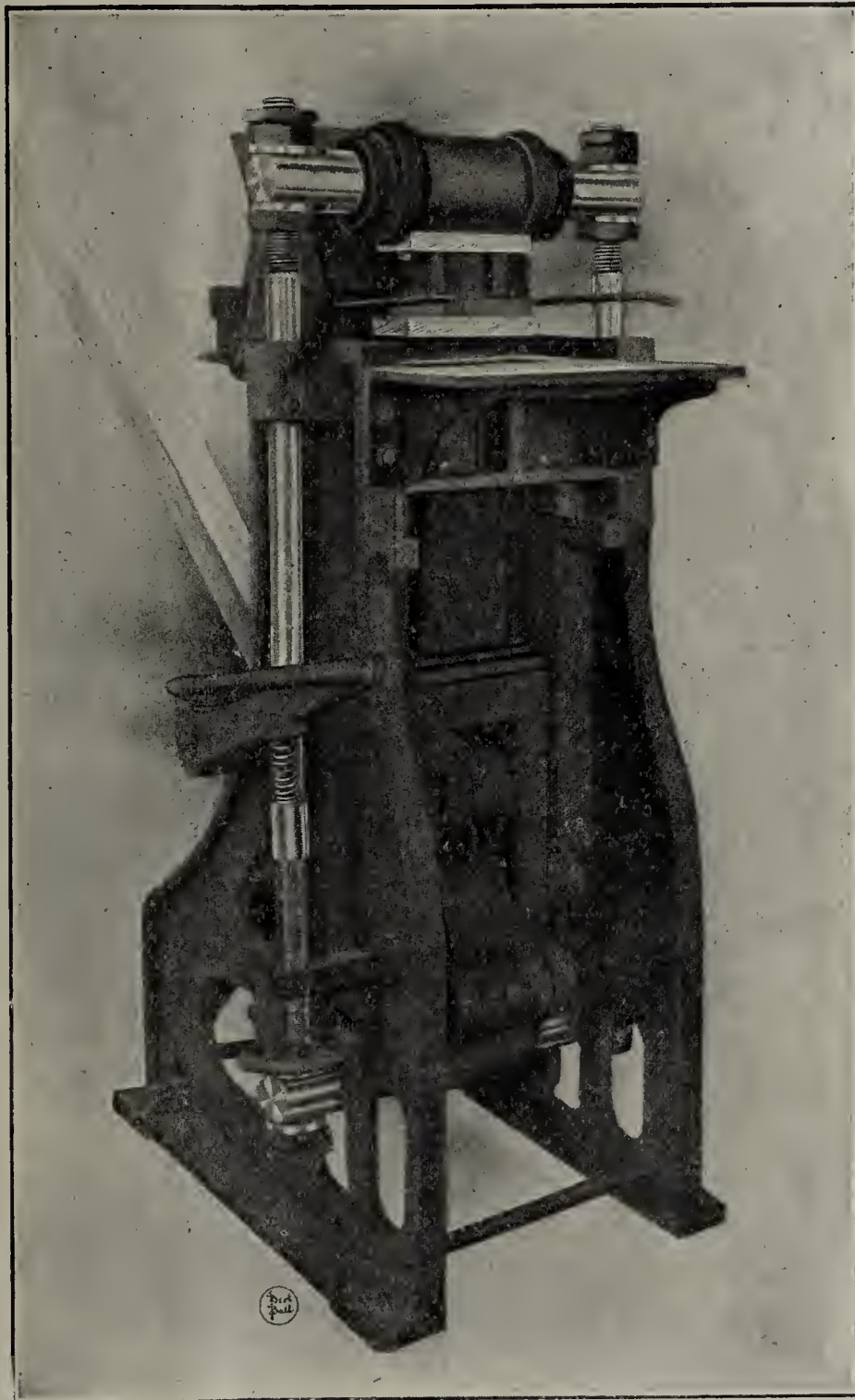
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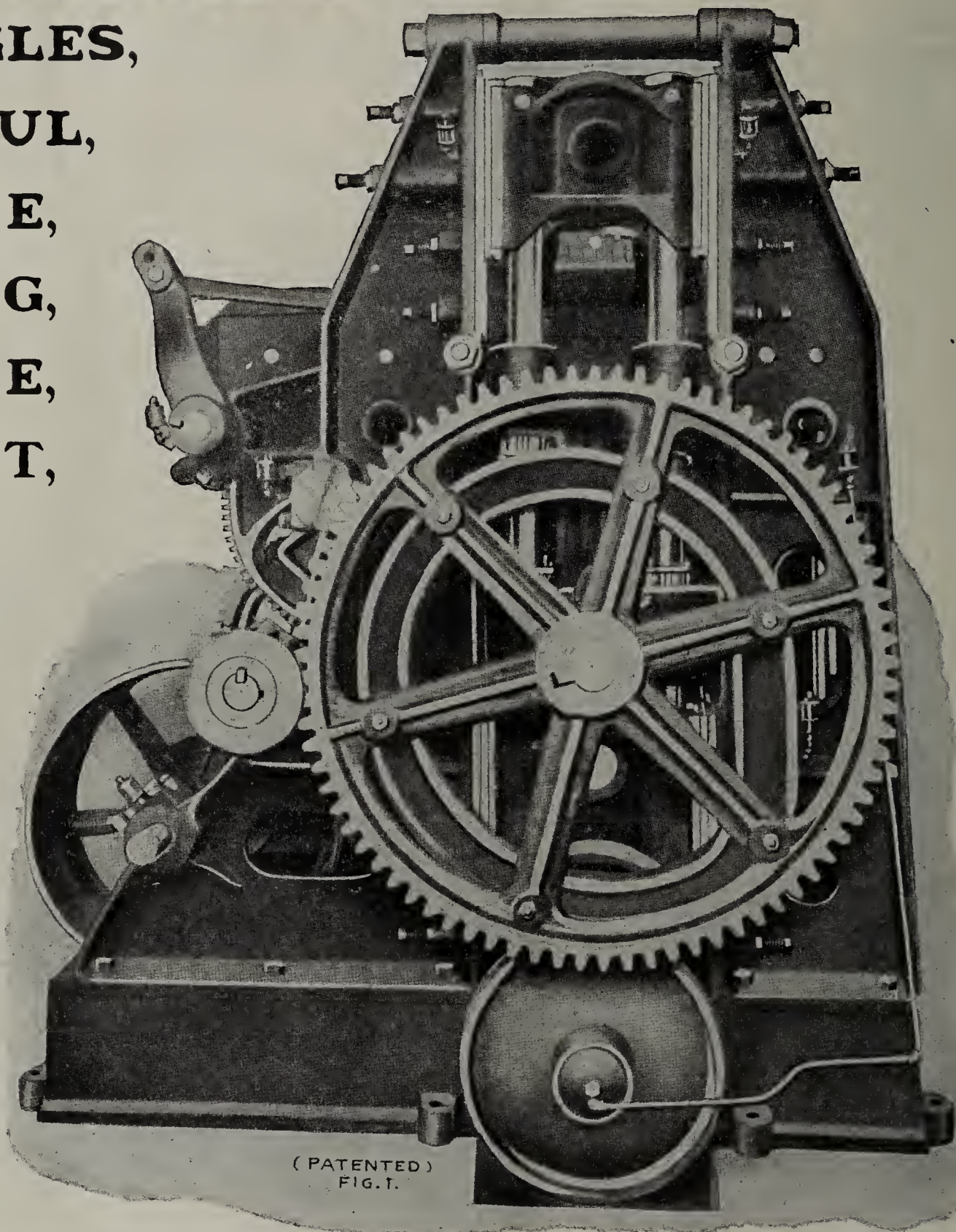
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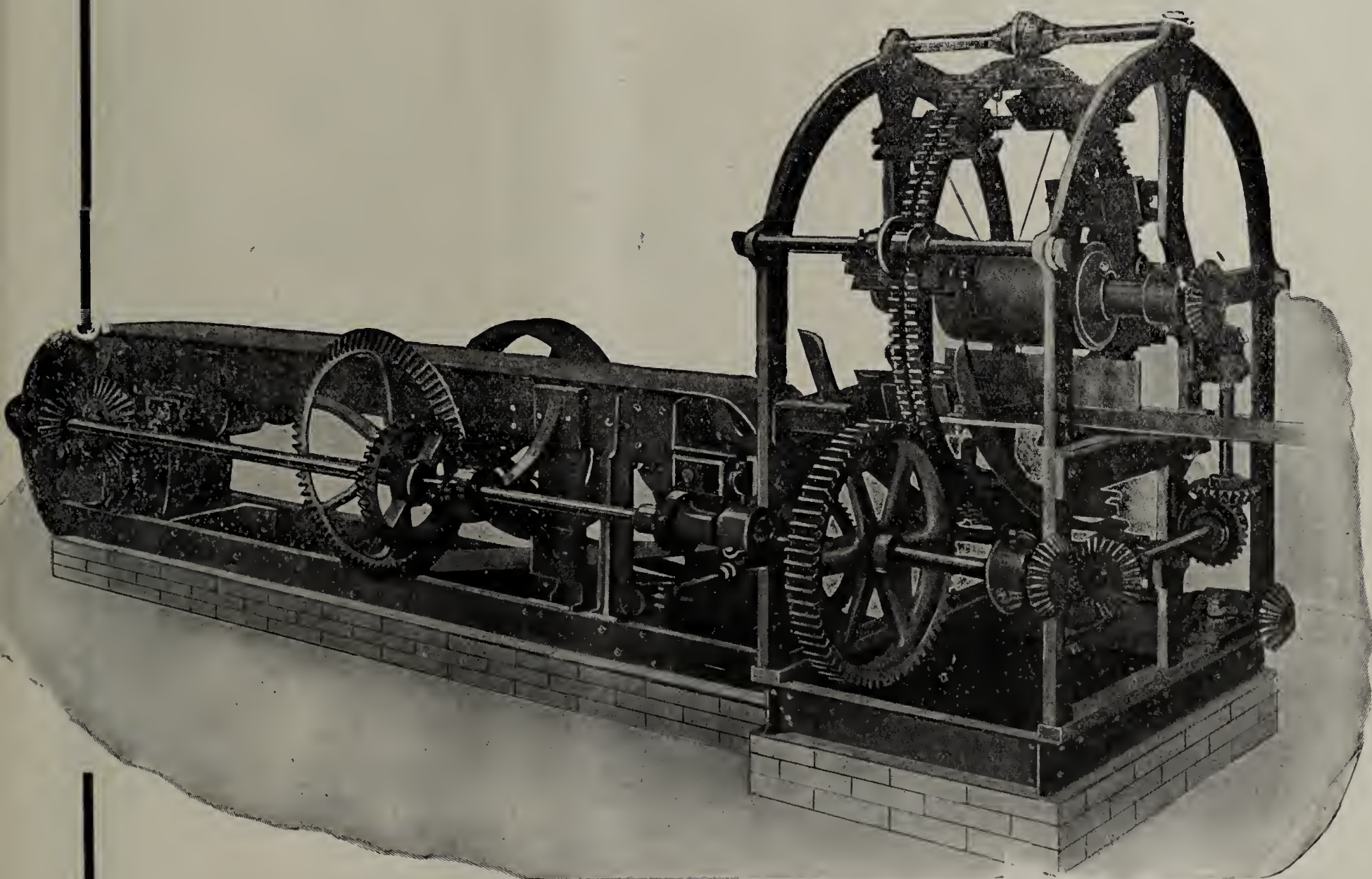
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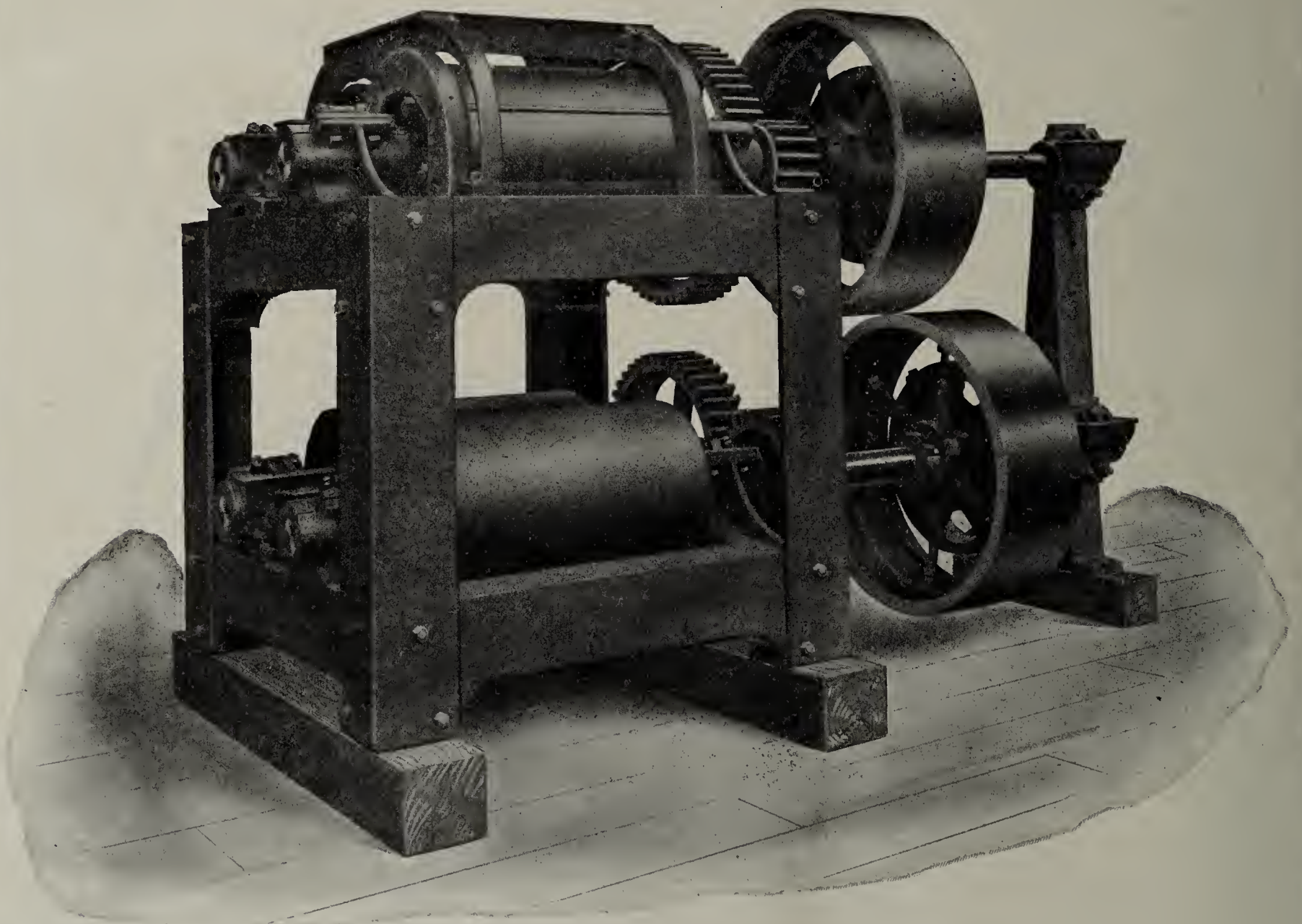


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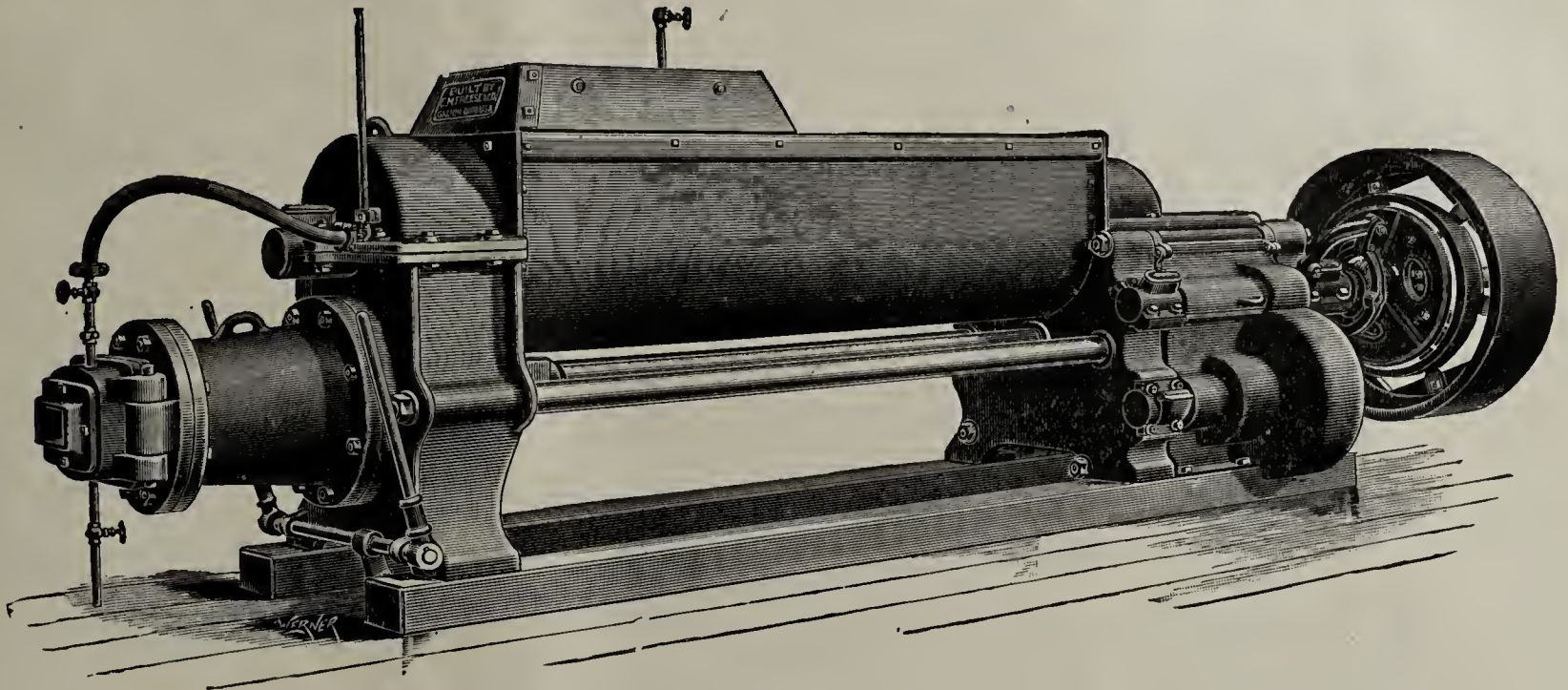
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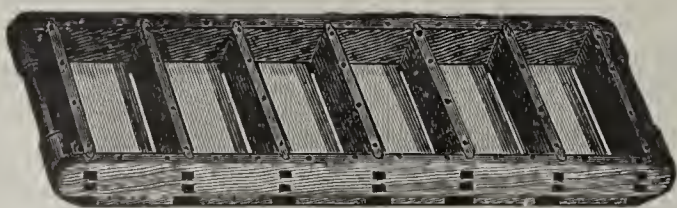


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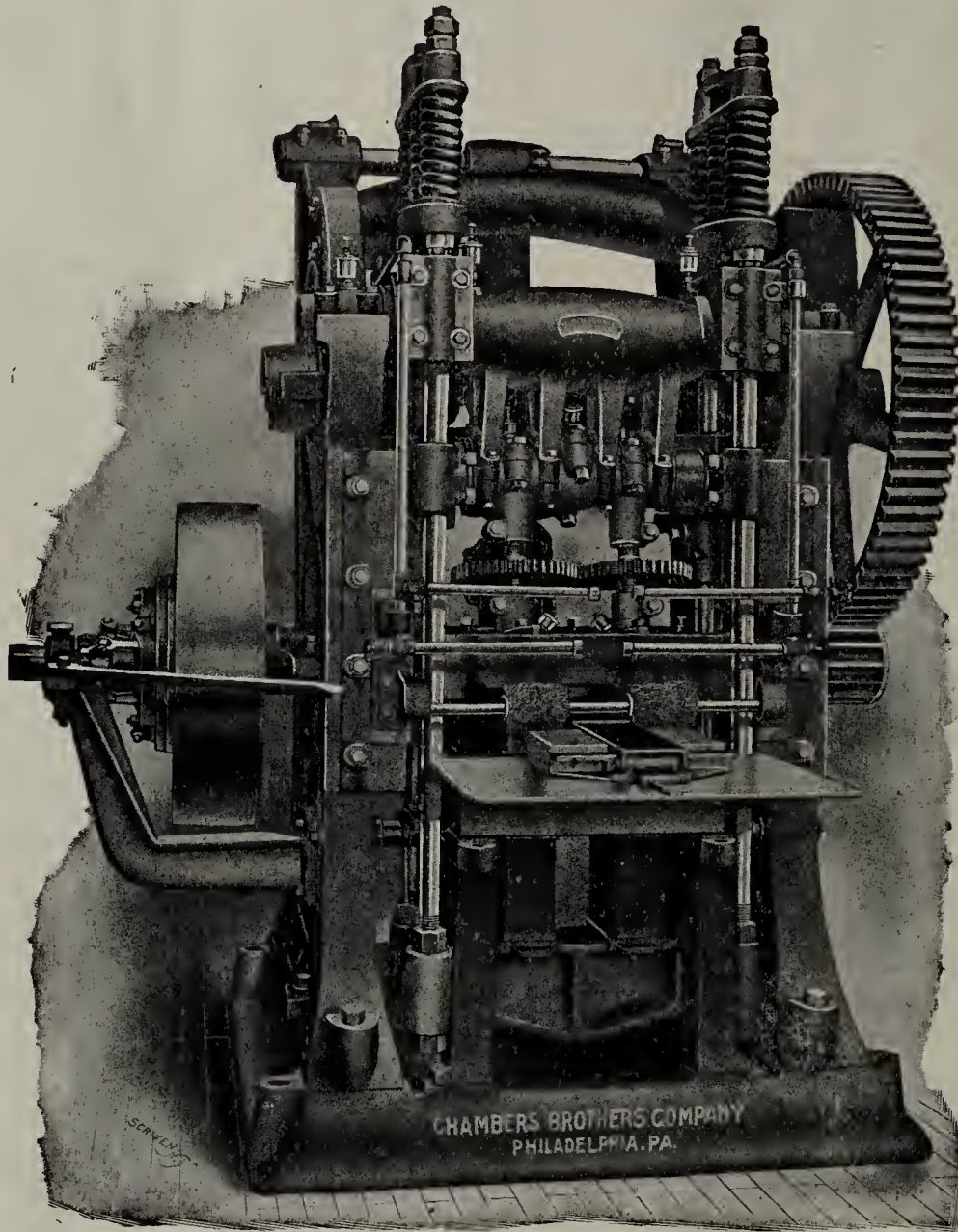
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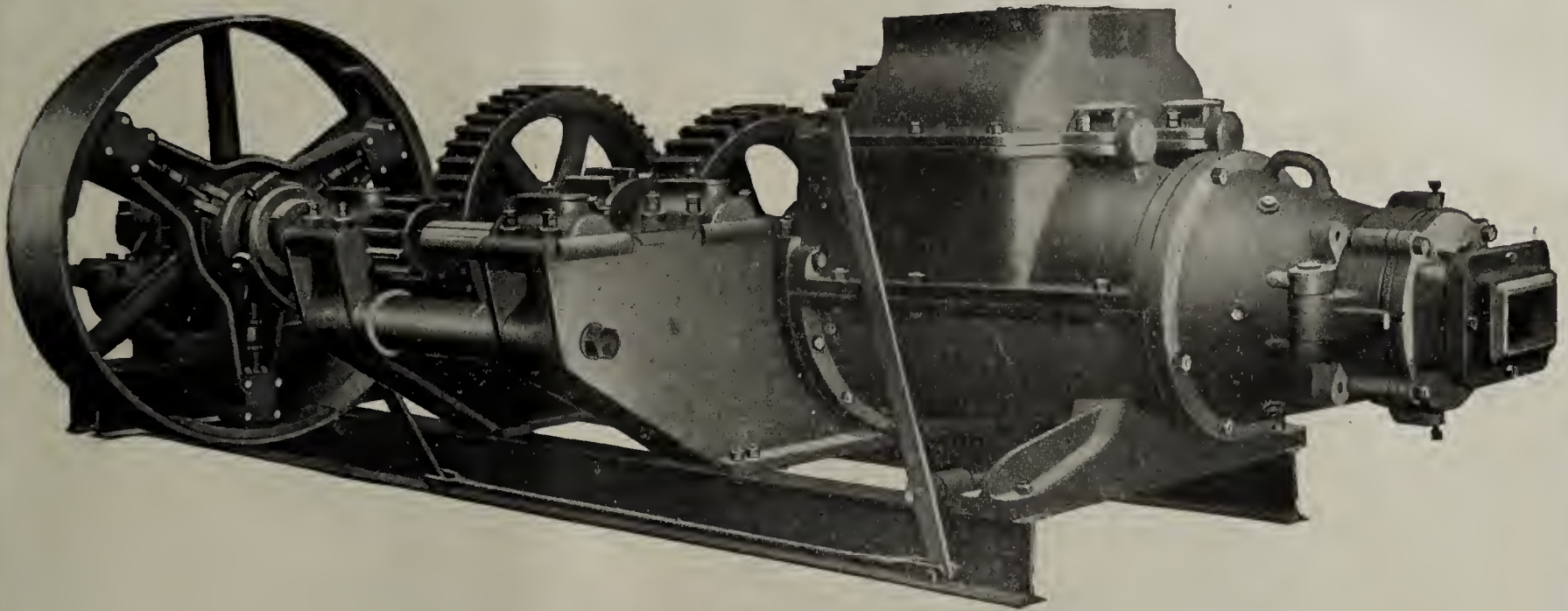
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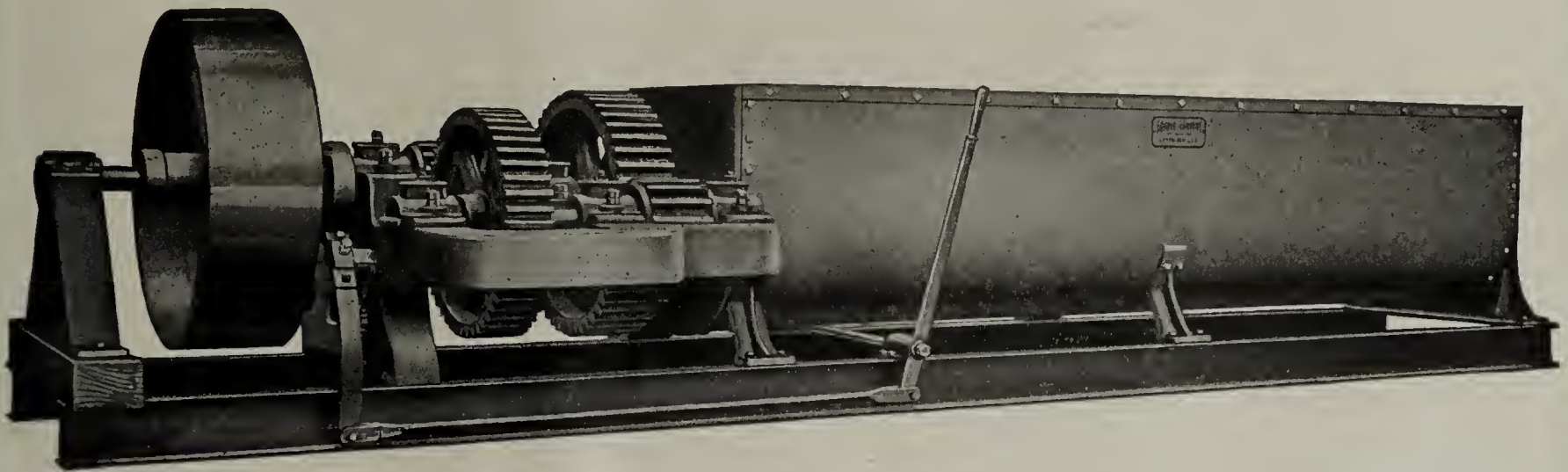
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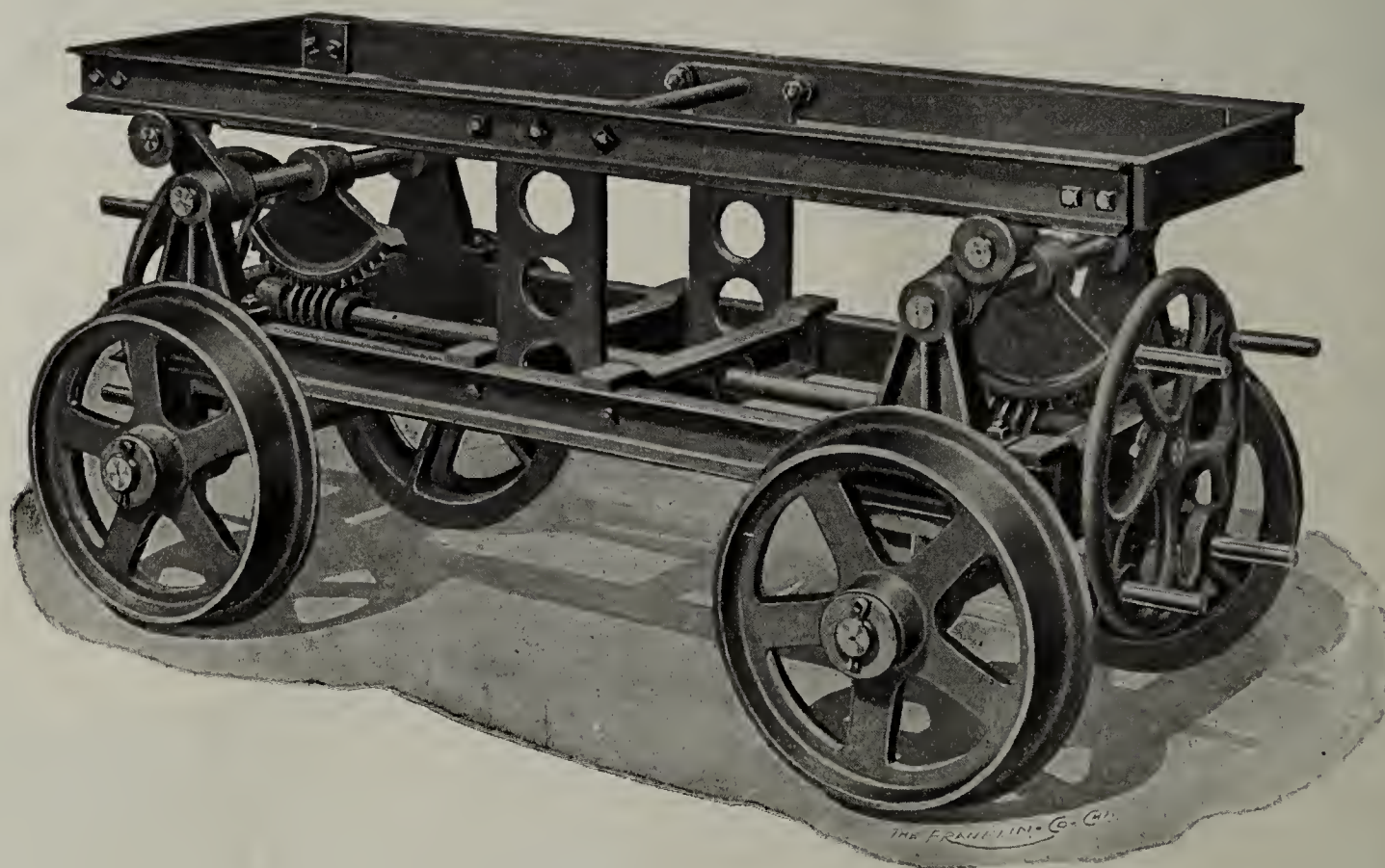
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Vol. XXX. No. 12.

CHICAGO, JUNE 29, 1907.

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Single Copies, - 10 Cent.

DURABILITY OF TILE.

BY CHARLES JAMES FOX, PH. D.

The most remarkable property of the ceramic or clay tile is its extreme durability which enables it to withstand for centuries the wear and tear of use and the insidious ravages of time. Geology shows many examples of remarkably preserved rocks formed of baked clay placed side by side with granite and other stones which are gradually being ground to dust by the very forces which are impotent against the harder clay. Archæology has given the world many examples of tile and other ceramic products which date back

to the ceaseless beating of the waves and to the deteriorating effect of rain, wind, heat and frost; the other appears worn, its corners rounded off, its base strewn with debris caused by wind and wave, rain and sun. The geologist tells us that these sharp angular cliffs were originally strata of clays, which were depressed to a depth below the surface of the earth where the internal heat baked them in a manner similar to the potters' fire, and subsequently cast to the surface by a geologic upheaval. The rounded cliffs are layers of granite, produced by the metamorphic action of the heat, on other layers associated with the clay. The wearing away of this softer stone has formed the clefts, cracks



Rocks on the Maine Coast



Floor Tile for Mediaeval Cathedral

several thousand years before the Christian era. History tells of ceramic floors in cathedrals, churches and abbeys which have been used without injury for centuries. Simple experiments and scientific tests demonstrate that baked clay is the most durable of all the substances used for floor or wall coverings.

The accompanying photograph of cliffs on the Maine coast shows two distinct classes of rock; the one stands out boldly presenting its sharp angles and unscarred sides

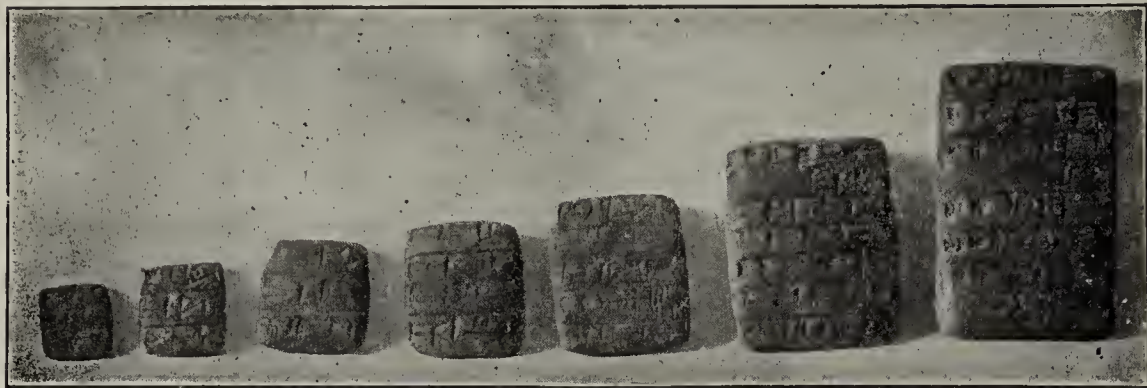
and coves between the harder cliffs of clay. These rocks were at one time a solid mass, but the wearing away of the granite has left the cove seen between the smooth and sharp angled ledges formed of baked clay. At the bottom and center of the cut can be seen the remnants of the granite, which have the appearance of worn, spongy looking stone. Thus granite, which is to us almost a symbol of all that is hard and durable, is really a perishable substance in comparison with baked clay. Try to scratch these rocks

of clay and you will find that steel makes no impression upon them; moisture can not penetrate them and no agency common in nature can corrode them.

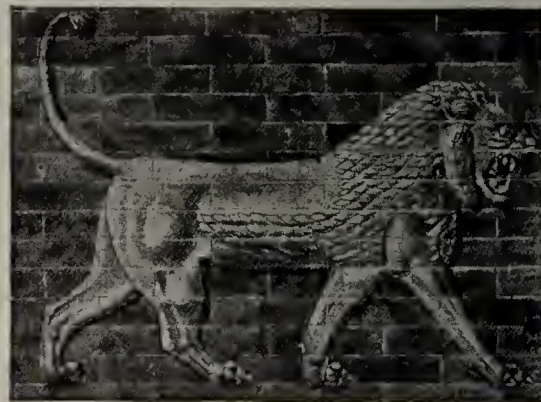
Among the articles found in the mounds of the Mississippi Valley are many bowls, jugs, cooking utensils and other things of baked clay used by prehistoric man. All of these have been broken but their fragments have neither decayed nor changed in color. But the most striking examples of the ancient potters' craft have been found among

latter being used to form the red, buff and brown colors. It is a noteworthy fact that in all these floors still in existence the marble portions have been well worn by use, while the clay tesserae are in almost perfect condition.

During the mediæval centuries of Europe encaustic, or monastic, tiles were used extensively for the pavements in the interior of English churches and abbeys. Many well preserved examples of these tiles, bearing the armorial, pictorial and symbolical designs traced by the monks, can be



Tile Bearing Babylonian Inscriptions



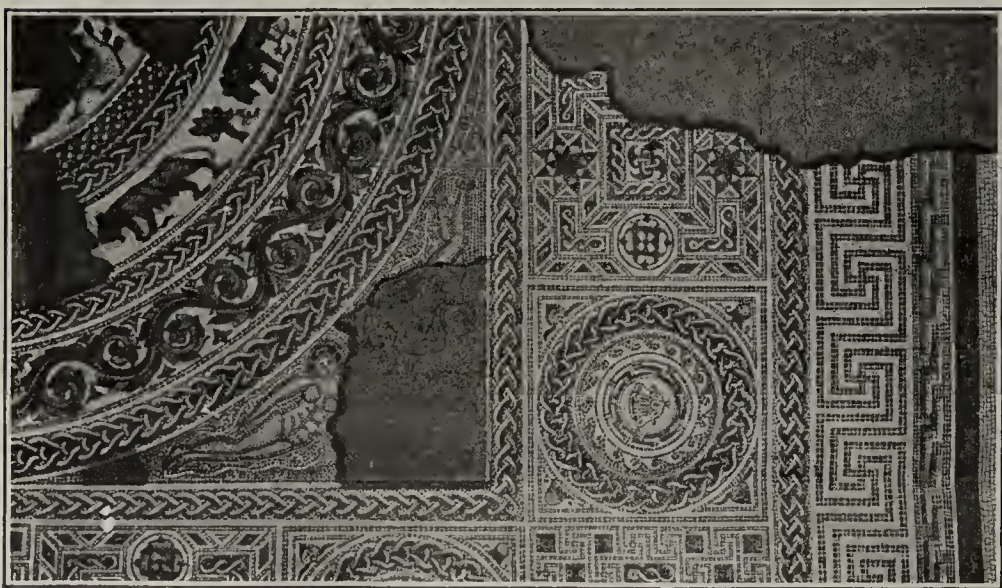
Lion of Babylon

the ruins of Babylon, Assyria and Egypt. The British Museum and other museums of Europe contain many examples of tiles from these countries which are from two to six thousand years old. These tiles are generally well preserved, retaining even their original brilliancy of color. The famous Lion of Babylon, made of yellow and green glazed tile, and the clay tablets bearing Babylonian inscriptions antedate the Christian era by several thousand years; yet in many cases they are as well preserved as if they had been taken from the kiln but yesterday.

An excellent comparison of the durability of Babylonian clay products with those of stone was made by the discovery of a colossal stone lion among a pile of bricks and tile. The

seen to-day in England; they are almost unworn by the tread of the countless multitudes who thronged the churches during the middle ages.

Coming from mediæval Europe to modern America one of the first tiled floors of note in this country was that in the Capitol at Washington, laid about fifty years ago. These tiles were made by an English firm, as a half century ago there was not a tile manufacturer in the United States. With the exception of one or two tiles at the entrance, which are worn less than an eighth of an inch, these tiles appear as if they had been put down but yesterday.



A Roman Mosaic Floor



Floor Tile for Mediæval Cathedral

angles of the stone figure were much worn and the features obliterated, but the sharp clear angles of the brick and tile were still intact after four thousand years.

The elaborate mosaic floors and pavements of the Romans formed a striking feature of their architecture. There are many examples of these mosaic floors in existence in Italy and throughout the former Roman colonies. The mosaics were formed of tesserae of marble and of baked clay, the

Ten years later an elaborate marble and slate floor was laid in the National Hotel at Washington, but a short distance from the Capitol. To-day the marble slabs of this floor are in many cases worn completely through, especially in front of the door and the clerk's desk, and the holes are filled up with cement. As slate makes a more durable floor

than marble, the alternating slabs of worn marble form deep indentations, in many cases hollowed out as much as three-quarters of an inch, between the harder slabs of slate. But even the slate is worn considerably and cracked in many places.

The relative durability of various flooring materials was



Floor Tile in Capital at Washington

ordinary jack-knife and try to scratch the tile with the sharp steel blade. It will be seen that the hardest kind of steel does not make an impression on the vitrified tile, but merely leaves a mark resembling that of a lead pencil, and which can be removed by simply wiping it off with a cloth.

Try the same experiment with a piece of marble and it will be found that steel easily scratches the marble. This is a very important consideration, especially for floors and hearths. The nails of the shoes will scratch and gradually wear out marble, but will make little or no impression upon tile.

Tile is the ideal covering for floor or wall. It is so hard that it can not be scratched by the nails of the shoes or other sharp pieces of steel. As a fire-resisting material it makes an excellent hearth, as it cannot be burned by red-hot coals. It is impervious to moisture, and, unlike marble, it is non-porous so that it cannot absorb dirt or dampness. Ink spilled upon it will leave no stain, while it is difficult to remove stains from marble.

Many centuries' experience has shown that the durability of the tile withstands not only knocks and blows but also the insidious wear and tear of time and constant use.

The South Bethlehem (Pa.) Brick Co. has been incorporated with \$5000 capital stock.

tested several years ago by an ingenious experiment of Mr. Frank Furness, a well-known architect of Philadelphia. The several specimens were cemented to identical blocks of sandstone, each of which weighed twenty-one pounds. Each sample presented a surface six inches square and a thickness corresponding to the usual thickness of flooring materials. They were placed face downward on a horizontal iron rubbing wheel, ten feet in diameter, which was run for one hour at a speed of seventy-five revolutions per minute. The blocks were held in place by a frame and the face of the wheel supplied with rubbing sand and water. The wear of the various flooring materials was then measured, showing the amount that was worn away by the wheel. The clay tile lost but $\frac{1}{8}$ of an inch in thickness by the hour's grinding of the wheel; the Vermont marble lost $\frac{3}{4}$ of an inch; the marble mosaic collapsed altogether, one inch being rubbed away within fifteen minutes, and the whole slab disappeared under thirty-five minutes. Owing to the scientific accuracy with which this experiment was carried out, it was a valuable and reliable contribution to the practical knowledge of the architect and builder.

Another simple experiment by which the extreme durability of the ceramic tile can be demonstrated is to take an



Marble and Slate Floor in a Washington Hotel

The Ross-Keller Triple Pressure Brick Machine Co. is shipping a complete four mould outfit to The Badger Pressed Brick Co. of Fond du Lac, Wis. The plant is to be located at Oakfield, Wis., and the product will be a high grade mottled brick.

were 1 cubic inch and any face was 1 square inch. Pressure was then placed on this, and gradually increased till the cube crushed. Four tests were made on ordinary red-face brick, as sold in general for building, and these required an average of 2,460 lb. to the square inch to crush them. This figure is given as a standard for ordinary stock brick and for comparison with the tests given below.

TABLE OF CLAY RESULTS.

Smpl.	15 per cent. Sand.			25 per cent. Sand.			33 per cent. Sand.		
	No. 1.	No. 2.	Aver.	No. 1.	No. 2.	Aver.	No. 1.	No. 2.	Aver.
A	3150	2820	2985	3190	3390	3290	2640	3060	2850
B	2900	2580	2790	2990	3375	3182	3400	2760	3080
C	2620	2760	2690	3250	3580	3415	3615	2880	3247
D	3480	2844	3162	3640	4370	4005	2510	2640	2575
E	3710	3410	3560	4360	4720	4540	3390	3570	3480
			3027			3686			3046

Here again we see that the addition of sand improved these products. The small blocks were all burned in the one kiln at one time, so that the conditions were uniform for all. The tests show that 25 per cent. of sand is again best, while 33 per cent. oversteps the limit and the ability to withstand pressure begins to drop again. You will notice also that the average of tests made on the clays having 15 per cent. of sand in them, and this, by the way, is about the average of our Ontario clays, is about the same as the standard of four tests made on ordinary stock bricks as sold in general for building purposes, which shows that these tests were about as fair as could be made. We realize, of course, that many tests must be made before any general statements can be made, but it seems sufficiently well established when an average of ten tests on a clay with 15 per cent. sand in it gives 3,027 lb. to the square inch, while ordinary stock bricks of commerce made from such clay also give 2,460 lb., and that ten tests of clay with the sand content increased to 25 per cent. gives an average of 3,686 lb. per square inch, that the addition of sand to clay is a desirable thing. It seems certain, at any rate, that the addition of 25 per cent. of sand, or one shovel of sand to three shovels of clay, is a decided improvement on strong clays, but this per cent. of sand should not be seriously overstocked or the values drop again.

Do not mistake me to mean that every one of you should add 25 per cent. to your clay in working; some of you have a sandy clay already, and no doubt you know it and are pleased with the way it works into bricks. But others, and a majority at that, have a strong clay, difficult to handle and work up—do not hesitate to use sand. It will not hurt the colour of your bricks unless there be limestone in it, and this is very rarely the case.

If you suspect limestone in your sand, put a little of it into a glass tumbler or a bottle, then pour in a little acid of any kind, and warm it slightly by placing it in a little warm water. If there is any limestone in your sand you will see a brisk effervescence or bubbling coming off the sand. If your clay burns to white bricks or buff bricks this will not hurt them, but if your clay burns to red bricks, avoid any sand or loam that shows limestone, for this will tend to spoil the colour of the bricks by making them light in colour, or even spotted.

The addition of combustible grogs, *e.g.*, sawdust or coal screenings, is for a different purpose entirely, and this is a subject which has not been considered very much in this country. In Europe such grogs have been used to a con-

siderable extent. Coal, *e.g.*, is powdered and mixed in the raw clay, when the kilns are burned this fine coal dust burns also and helps to distribute the heat throughout the kiln and aids in the burning. The particles of clay fuse slightly and knit to each other, and a more or less porous brick results.

Considerable use is now made of coarser materials as grogs, *e.g.*, coarser coal or sawdust is commonly used. This is used in the manufacture of porous bricks, terra-cotta lumber and fireproofing.

The aim of the architect and contractor now is to erect a building that will be fireproof and yet not too heavy. This is now accomplished by making the main structure or shape with iron and filling in with terra-cotta lumber or fireproofing. To make this we may use any kind of clay as the colour of the product does not signify, provided it is strong and light. The clay is pugged thoroughly with coarse sawdust, the blocks of any desired shape are made, as in the stiff mud process, by varying the die; they are dried like tile, after which they are burned in a down-draught kiln. The sawdust soon catches fire, and helps to burn the blocks, and after burning out the small pores are left, making the blocks quite porous or vesicular, so much so that the blocks are very light and can be used for ceiling, arches, domes, roofs, partitions, etc., or for any of the purposes for which heavier timber would be used. These blocks are so porous that nails, screws, spikes, etc., can be driven into them with about as great ease as into timber. The rough porous blocks serve admirably to plaster on to, so that a building of any shape may be covered by them and plastered over and painted. For this reason most of the interior decoration now seen in large buildings is accomplished in this way.

The discussion of grogs so far has been confined to different substances that are added to the raw material. There is one new use for grogs now which may not be well known to you all. All of you who are working with the ordinary scoved kiln or Dutch clamp kiln have experienced the difficulty of burning the bricks right to the outside of the kiln. This has been aided in many ways, *e.g.*, by leaving the heads more open in piling, to cause more draught in that part; or again, the centre of the kiln may be covered on top by mud, or by asbestos sheets, thereby throwing the draught to the outside around the edges. But a new and much better method may now be used. This consists in placing a row of hard coal screenings, which are cheap, around the edge of the kiln on top. The ridge of hard coal is about 18 in. wide and rounded up like a potato ridge. In setting the kiln the heads are left open as usual, and a row of skintlers are usually placed on the very outside row. After the kiln has burned up considerably in the usual way, and when the heat begins to get up through the heads, the kiln man goes up on top, and by the use of a small wedge like a poker he works the bricks a little and allows a little of the coal to trickle down into the kiln. This coal takes fire and helps to burn the bricks, and at the same time creates an extra draught through the heads, which soon draws more of the kiln fire to those parts. This act should be repeated every hour, letting only a little of the coal trickle down each time, so as not to choke the draughts or cause too much fire in the heads. By this process your kilns can be burned right to the scoving. I have seen them done, and good red-face bricks shipped from against the scoving. In down-draught kilns, of course, the fire can be drawn to any part of the kiln by the use of dampers.

I have confined all my remarks to this one division of clay manufacture, because I am convinced that it is a most important matter to you all, and I am sure it is one that has not received its share of consideration on your part. These are not experiments; they are points that are in use by successful clayworkers, and I hope I have been able to arouse your interest in this great department of your work.

REPAIRING KILN WALLS.

It is remarkable how few burners realize the importance of keeping their kiln walls perfectly sound, in order to get all the advantage they can out of the chimney draught, which is seldom so strong that any waste of drawing power can be allowed, says the British Claymaker.

Indeed, when the walls or flues are allowed to become leaky, it is almost certain that the best conditions of firing the kiln can never be attained, because the proportions of air and gases drawn through different parts of the flues and chimney will be quite different to those intended by the designer of the plant.

Not only so, but the output of the kiln will be diminished and a further loss ensue from this cause, and the quality of the goods produced will also be adversely affected.

We showed last year (vol. xiv., p. 213) how serious may be the loss of fuel when the walls or flues of a kiln are in an unsound condition, and that the loss from this source alone would more than pay for the slight additional cost of a frequent inspection of the kiln. We now notice that the *Topferzeitung* has been going into the methods of repairing kilns very carefully, with excellent results, some of which we here present to our readers.

THE FIRST REQUIREMENT.

The foundation of all satisfactory burning must be found in the sound construction of the kiln from good materials. Shoddy or "jelly-built" kilns can never be made into good ones.

An equally important matter is the precautions which have been taken in building the kiln to prevent it from drawing up water from the subsoil, particularly when the kiln is on the side of a hill, in the neighborhood of natural springs or near to a river bed.

If the foundations of the kiln are badly built, the amount of moisture drawn up will be so large in comparison with any air leakage that may occur through the kiln walls as to make any work spent on the latter of little or no avail in increasing the draught.

On the other hand, with a good and sound foundation, the maintenance of a kiln in good repair and in first class working order is a comparatively simple matter, and builder, burner and employer are equally saved much anxiety and trouble.

Whenever a kiln is heated, the expansion undergone by the walls of necessity produces a certain amount of movement, which later develops into cracks if precautions are not taken when the kiln is built allowing for these movements, so that the cracking can be reduced to a minimum.

THE THICKNESS OF THE WALLS.

Strictly speaking, the thickness of the walls of a kiln should be proportionate to their length, and any buttresses which may be added should be in proportion to the width of the kiln chambers, in order that the lateral movement of the walls may be adequately prevented from doing any damage.

In repairing the inner walls, a lean fire-clay should be used, and only sufficient water be added to make it into a fair paste, as excessive contraction of the "mortar" can

thereby be prevented. Even for the outer walls it is desirable to use this stiff mortar of lean clay, although some kiln builders consider a better bond may be obtained with a mortar of different composition. In any portions of the kiln which have to stand specially high temperatures, the use of fire-clay slip for mortar is essential. For lower temperatures a lean clay of small contracting power may be used instead, especially if fire-clay is dear in the neighbourhood of the works where the kiln is erected.

If lean clay cannot be procured, the clay available must be made as lean as possible by the addition of ground burnt clay, or sandstone, or similar material, so as to reduce its plasticity and contraction to the smallest possible limits.

THE INSULATING MATERIAL.

When kilns are built with double walls, the space between which is filled with some insulating material (preferably sand), in order to keep in the heat, without at the same time going to the expense of a solid brick wall, it is essential that the material between the walls shall be of an easily movable character, as it will then conform itself to the movements which are continually taking place in the kiln walls as they are being heated or cooled.

Clay should not be used for this purpose, as it is not sufficiently mobile, and the sand which it is preferable to employ is one in which the finest particles are most abundant, provided that these do not consist of clay, as is by no means seldom the case with a very fine sand. On this account the sand obtained by grinding rock is to be used in preference to a natural (and therefore less homogeneous) material.

The absence from the sand of any material which can be affected by the heat enables it to retain its mobility for a very long time, and therefore ensures its filling up the small crevices in the walls of the kiln long before they are visible to the eye of the burner.

If, on the other hand, clay, or clayey sand, is used between the kiln walls, the clay bakes slowly into compact masses, which tend to harm the kiln rather than benefit it, and are quite useless for filling up any cracks or leaks which may occur.

It follows, from what has already been stated, that the keeping of a kiln in good air-tight condition depends very largely on the original construction and materials used; but as leaks will appear at times, even in the best of kilns, it is necessary to consider how they may be repaired satisfactorily.

As soon as a chamber has been emptied, a man should be sent to carefully examine its walls and roof, and to repair any cracks he may find. The outside of the kiln can be repaired when the chambers are in use.

The best repairing material for small cracks is a stiff mortar of fire-clay and water, though, as already stated, any sufficiently lean clay, will do for all but the hottest parts of the kiln.

As long as the sand used for a "filling" between the walls is movable, it may be relied upon to fill up the cracks sufficiently to only need a little mortar on the surface in order

to keep in the sand, but as larged cracks will allow the sand to run through them, it is desirable that the inspection of the chambers should be as frequent as possible.

If the sand has sunk together into a solid mass, it will be necessary to add more in order that the spaces between the walls may have a sufficiency of filling material to keep all the cracks from leaking.

When a crack is so large that an application of the fire-clay mortar cannot fill it it is best to cut out sufficient of the material to be able to insert one or more new bricks, though for cracks of half an inch or so in width the use of the mortar (if it be sufficiently stiff) will afford ample protection, particularly with the help of the sand between the walls.

A USELESS METHOD.

A common, yet far from satisfactory method consists in painting over the walls of the kiln with a mixture of clay and soda or ashes once or twice each year. The idea of this is that the material will vitrify, and so fill up any small cracks in the kiln walls. Unfortunately, experience shows that this hoped-for effect is seldom realized, as the cracks are hidden rather than closed, and the airtightness of the walls is not increased.

Such a method of treatment is entirely unnecessary with a kiln well built on modern lines, and with a suitable insulating material between the walls, though it may be necessary to apply a complete facing of mortar to an old, single-wall kiln badly in need of repair.

The rules for repairing kiln walls readily classify themselves under two heads, namely (a) build your kiln well in the first place, and (b) fill up small cracks as soon as possible after they have appeared.

If these directions are faithfully carried out, and a regular and thorough inspection of the kiln is made by means of draught gauge tests at frequent intervals along the kiln's length, there will be little or no loss sustained from defective working of the kiln through leaky walls.

SCHOOL TO TEACH POTTERY.

Madison, Wis.—A summer school of pottery has been started here in Madison, Wis., called the Badger Summer School of Pottery. The school is conducted in the studio of a local potter. The course opened July 8. In addition to all kinds of clay manipulation, the construction and application of glazes is taught and the students do all the work of preparing the ingredients and firing the kiln—thus obtaining a practical knowledge of all the processes involved. Hitherto pottery schools have been as careful to conceal the technical methods from the student as the factory is to keep the secrets of the trade from the workmen. Miss Mills, who conducts the school, has made a special study of the technique of pottery under Prof. Binns of the School of Pottery at Alfred, N. Y., who is one of the most eminent authorities in the United States. Prof. Binns is a writer of note and before coming to America was superintendent of the Royal Worcester works in England. The school is equipped with a wheel and glaze mill, driven by an electric motor; a hand jigger and a kiln. The kiln is one practical for school purposes and private studios. The school is conveniently located in the beautiful Neils home overlooking Lake Monona.

CYLINDER IN PLANT OF SANDSTONE BRICK COMPANY BLOWS UP AND WRECKS BUILDING.

With a roar which was heard for miles, a hissing of steam and a cloud of pulverized brick, one of the four twenty-ton steel cylinders at the plant of the Schenectady (N. Y.), Sandstone Brick Company, a short distance beyond the city line near Campbell avenue, was blown through the building, a distance of nearly three hundred feet, killing one man in its progress down the tracks of the Delaware & Hudson Railroad. Two other men were blown to atoms at the rear of the plant, being hit by the kettle head, pieces of their bodies being picked up in various places within a radius of two hundred feet.

The dead are: Foreman Servey, a Frenchman, of the cylinder gang, aged about twenty years.

C. Whel, one of the kettle gang, a Norwegian, about twenty-four years of age.

Jack Curran, a trestleman, employed by McMullen & Woods, construction work, aged about thirty-five years.

The accident occurred about 8:45 in the morning.

The Schenectady Sandstone Brick Company, with a capacity of about 24,000 brick a day, is located opposite the Weber Porcelain Works, along the tracks of the Delaware & Hudson Company, a stone's throw south of Campbell avenue. The plant consists of the mixing beds, presses, boilers and steaming cylinders, housed in a large wooden structure. The cylinders are in the easterly end of the structure, four in number and each about forty feet in length.

At the rear of the plant are the sand banks, with a narrow-gauge track about a hundred feet distant. Beyond the track is a long pile of cordwood. Directly at the rear of the easterly end of the plant is the big water tank, towering fifty feet above the ground, on top of which was mounted a huge windmill. The structure was of structural iron with the exception of the tank, with a capacity of about 12,000 gallons of water, which was of heavy planking.

The tracks of the Delaware & Hudson run along the easterly side, a switch and side track being nearest the building. In front, on a short wooden trestle, stood a coal car partially unloaded. A gang of trestle men were at work on the trestle making repairs. Across the tracks is the large porcelain plant.

It is the supposition of those acquainted with the usual method of brick making, including employees of the plant who were interviewed, that the Frenchman, Servey, believing that the pressure had been let off, started to remove the big nuts holding fast the cylinder head. These nuts, if loosened, would have caused an explosion such as occurred.

FINDLAY MAN PROMOTED.

R. E. Kelly, formerly manager of the Findlay (Ohio) Hydraulic-Press Brick company, has accepted the position of sales agent for Warren B. Ferris, dealer in brick and building materials, who has an office in the Columbus Savings and Trust building, Columbus, O. Mr. Kelly has taken up his new duties, while Mr. Ferris, who is president of the Devonshire Brick company, which has a large plant at Roseville, will devote his attention to managing the plant and in the buying department.

SAND-LIME BRICK.*

BY E. W. SMYTHE, MADISON, WIS.

There seems to be a general impression that sand-lime brick is a new and untried building material; scarcely out of the experimental stage. Although sand-lime brick cannot boast of a pedigree traced to the time of the Pharaohs or the Tower of Babel, still it has been in use long enough to establish without doubt its quality as a first-class building material.

Sand-lime brick were first made in Potsdam, Germany, about 1820. Potsdam, situated in central Germany, is surrounded by a broad sandy plain; there being no clay or stone available for building purposes, sand and lime were made into mortar, molded into bricks and allowed to cure from three to four months in the open air. These brick withstood all the required tests and increased in hardness with age. The attention of Dr. Michaelis, of Berlin, in 1880 was attracted to this peculiar kind of brick, and after experimentation he discovered, that by subjecting the green brick to steam under pressure the brick after a few hours were rendered as hard as though they had been exposed to the atmosphere for many months. After the discovery made by Mr. Michaelis, the manufacture of sand-lime brick increased rapidly throughout Germany and many large plants for their production were erected.

In our own country the oldest sand-lime brick of which we have any record are those in the walls of a house in Mobile, Ala., built 50 years ago. As to whether these brick were made in this country or elsewhere is not known, but at any rate they are in good condition and appear to have been made in a manner similar to those first made in Germany.

But not until 1901 were sand-lime brick manufactured in any considerable quantity in the United States; during this year two plants were in operation. In 1903 there were 16 plants; in 1904, 57, and in 1905, 130. At present there are probably about 200 plants. Among these plants there is a great diversity in the manner of handling and combining their materials. These differences occur from local conditions and the way in which they hydrate the lime and the manner of incorporating the lime with the sand.

In a general way, I shall now describe the process of manufacturing sand-lime brick as carried on by the plant in this city, and then refer briefly to some of the methods used by other manufacturers.

The sand as it is brought in dump cars from the bank is shoveled into an elevator boot from which it is elevated about 35 ft., and discharged upon a vibrating screen. Here it is run through a $\frac{1}{4}$ -in. mesh screen and falls into a conveyor over the numerous coils of a steam drier. The sand must be perfectly dry. There can be no half-way place in regard to the dryness of the sand, for you cannot mix sand and lime intimately unless both are thoroughly dry. The wet sand as it rests upon the pipes dries and runs down into a hopper-shaped bin in the bottom of which is a conveyor for drawing the sand out as it is needed.

The lime is slacked in water-tight steel boxes mounted on wheels. Each of these has a capacity of about 450 lb. of dry slacked lime, a quantity sufficient for one thousand brick. The quicklime is weighed out, placed in the boxes and the proper quantity of water added to it. To determine the correct amount of water to apply to the lime in order that a dry slack may be secured, is not always easy, as the lime when received at the factory is nearly always more or less air-slacked, and also there is considerable variation in the quality of lime even when the limestone comes from the same ledge. After applying the water the lime cars are run under the brick cars in the same cylinder in which the bricks are hardened, and the slacking is thus completed, and the surplus of moisture (if not too great) dried out. The dry slacked lime is now dumped from the cars upon a "grizzly" which takes out all the large cores. Passing through the "grizzly," the lime descends into a hopper and is conveyed to an elevator which discharges it into a bolting machine where all the small cores are extracted. Leaving the bolting machine the lime falls into a bin directly opposite the bin containing the dry sand.

Between the lime and sand bins is a measuring device, and the dry sand and lime are brought to it by conveyors placed in the bottoms of their respective bins. The right proportions being measured out, the mixture is allowed to fall into a preliminary mixer where for two or three minutes the sand and lime receive their first mixing. Passing on from this mixer the sand and lime are fed by a conveyor into a tubemill where they are thoroughly ground and mixed and each grain of sand is completely coated with minute lime particles. Leaving the tubemill the mix is at once elevated to a pugmill where just sufficient water is added to cause it to cling together when compressed tightly in the hand. The pugmill discharges the dampened material into a 4-mold press. The green brick are loaded upon cars, 1,000 to a car, and run into a large steel cylinder 50 ft. long by 6 ft. in diameter. After filling the cylinder (which holds a day's run) live steam is turned into it. About 2 hours are required to bring the steam pressure up to 120 lb. per sq. in., which pressure is maintained for 8 hours. After steaming, the brick are ready for market. Twenty-four hours have elapsed since the sand left the bank until it leaves the cylinder a finished brick ready to lay in the wall. In several instances we have afforded masons the unusual pleasure of laying hot brick on a cold morning.

In the process of manufacture just described the lime was slacked before incorporation with the sand, but in some processes the quicklime is ground, then mixed with the sand and passed through a tube or ballmill. After grinding, the proper amount of water is added, and the mixture is conveyed to a silo where it is permitted to slack and cure for 24 to 48 hours. It is then withdrawn and made into brick. Others grind but a part of their sand and lime and some do no grinding whatever. There are some factories which use the damp sand directly as it comes from the bank; to this damp sand damp slacked lime is added. The two are run through a short pugmill, then to the press and made into

*A paper read at the 7th annual meeting of the Wisconsin Clay Workers' Association.

brick. The process is beautiful for its simplicity, but the product is not a credit to the sand-lime industry.

The materials entering into the manufacture of sand-lime brick are as common as that entering into the production of clay brick, but as all clays are not suitable for making good clay brick so all sands are not suitable for making good sand-lime brick. The sand must be clean and contain a high per cent of silica. Of all the impurities in sand, clay, iron oxide and feldspar are the most common. The two latter may be left out of consideration, as they seldom appear save in small quantities. Clay, however, is nearly always found in sand and many times in considerable quantities. To determine what effect the presence of clay has upon the strength of sand-lime brick, S. V. Peppel, a member of the Ohio Geological Survey, made some valuable experiments. He made up numerous samples of brick, varying in each the percentage of clay. Upon testing these brick he found that up to three per cent addition of clay very little change took place in the strength of the brick, but for amounts over this there was a decided decrease both in crushing and tensile strength. It was also interesting to note that small amounts of clay decreased slightly the water absorption of the brick, acting to some extent as a waterproofing agent.

For the manufacture of sand-lime brick a high calcium lime is by all means the best. Magnesian limes while they give just as strong a brick as do the high-calcium limes yet they are too slow in slacking and one runs considerable risk in using them, since if the lime is not thoroughly slacked before the brick go into the hardening cylinder slacking will continue, and the lime expanding will crack and ruin the brick. The best practice demands eight per cent by weight of slacked lime. A less amount of lime than this does not give a brick first-class in strength; and a larger per cent of lime than this, while it adds slightly to the crushing strength of the brick, it also adds to the water absorption, and incidentally to the cost.

To secure the best results the lime must be thoroughly mixed and ground up with the sand. For this mixing and grinding there are various machines upon the market which can be used. Among them are the tubemill, ballmill and gyratory mill. The last two mills mentioned have one advantage over the former, that is of being able to handle the material when it is slightly damp, whereas in the tubemill a trace of moisture in the material causes the lime to stick and form a coat over the sides of the silex lining, in which case little or no grinding is done by the mill. However, the material being dry, of these three classes of mills I believe the tubemill to be the best, as it not only gives a very finely ground product but also gives a more thorough mix than the other two mills. Another point in its favor is that the cost of repairs on a tubemill is considerably less than that required by the ball or gyratory mill.

In the manufacture of sand-lime brick the machinery is subject to much greater wear and strain than that used in the production of clay brick, and the maximum of this wear centers in the grinding mill and the press. The press must be massive and built to withstand excessive strains, because a slight variation in the amount of water added to the mix makes a very great difference in its compressibility—there-

fore the press must have a large surplus of strength in order to withstand this extra stress which will most likely be brought upon it. Within the press the greatest wear is on the mold box and mold liners. A set of the best liners will turn out about 100,000 perfect brick. Beyond this number they become considerably worn and the edges of the brick are feathered and rough so that they are suitable only for common brick.

In steaming the brick two methods can be followed to secure the same result: either a high steam-pressure for a few hours or a low steam-pressure for a comparatively longer period. In either case the brick will attain the same degree of hardness. Most manufacturers are, however, agreed that 8 hours at a pressure of 120 lb. per sq. in. (2 hours being required to bring the cylinder up to this pressure) is the best and most economical practice. The steam must not be turned in too fast, as the surfaces of the brick will become highly heated while the interiors remain cold; the unequal expansion thus produced causes the brick to check.

Through the overzealous efforts of machinery jobbers, who think only of disposing of their machinery, an erroneous impression has been spread abroad that sand-lime brick can be manufactured to an extremely low cost. The cost of manufacturing sand-lime brick depends upon the same variable quantities as does the manufacture of clay brick or any other product. Labor and fuel are the main items in the manufacture of brick and to produce brick cheaply a dollar's worth of labor must be got for every dollar paid for labor, and for every pound of fuel the greatest possible number of heat units must be utilized. It is the stopping of the little leaks that make the profits in manufacturing.

All things considered I believe that an economically operated sand-lime-brick plant and an economically operated clay-brick plant, both making a first-class product, will, providing the cost of labor and fuel is the same, produce these brick at about the same cost.

In closing I wish to quote two statements made by men who in their respective countries are well acquainted with building materials. Fritz Pohlmann, architect of the Bureau of Public Works of Germany says: "The satisfactory experiments made with sand-lime brick have induced the administration of the state and cities to abandon their attitude which was for a long time unfavorable, and to use this material in numerous public structures." The German government will use only building materials which have been subjected to thorough tests, extending over a period of 10 years.

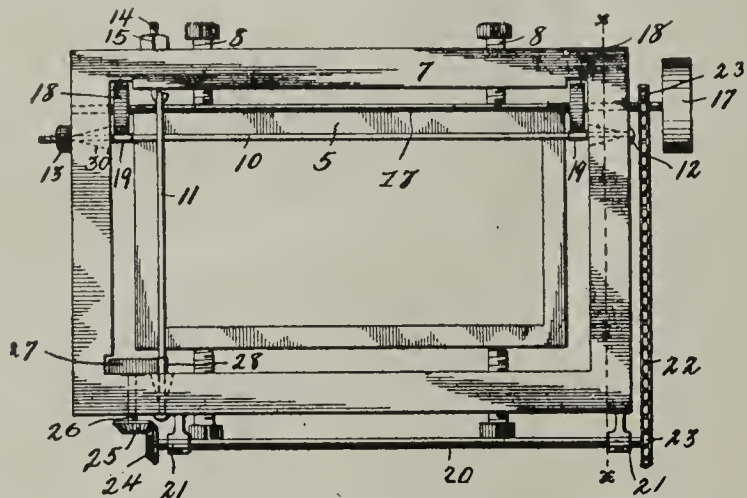
In a report issued by your Department of the Interior, Mr. Middleton who compiled the report makes this statement in reference to sand-lime brick: "That this method of manufacture of building material is a success, and will be a permanent factor in the building industry, is hardly to be doubted. It is also equally certain that it will never displace the time-honored burned clay brick."

The Henry Martin Brick Machine Manufacturing Company of Lancaster, Pennsylvania, are shipping one of their Animal Power outfits to Champerico, Guatemala.

NEW INVENTIONS THAT ARE OF INTEREST TO THE CLAY MANUFACTURER.

These new inventions are those that are especially of interest to anyone engaged in the line of building materials and their manufacture, or machinery to make them.

850,427. Device for Making Ornamental Brick. Alex H. Grant, Middleport, and Milton N. Grant, Columbus, Ohio, assignors to The Columbus Clay Products Company, Columbus, Ohio, a corporation of Ohio. Filed Jan. 21, 1907. Serial No. 353,231.

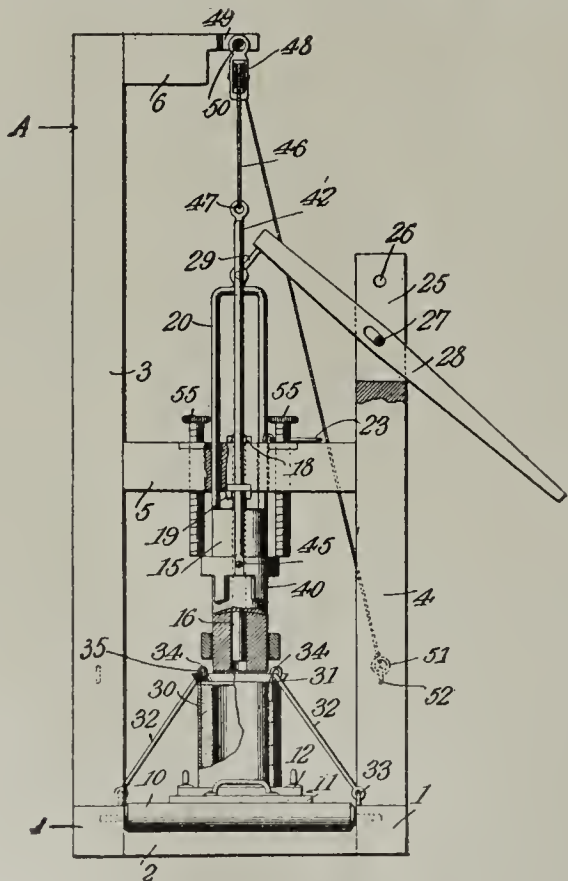


Claim—In a device of the character described, the combination with a machine having a die through which a mass of clay is discharged, of a wire arranged at the mouth of said die and adapted to engage and roughen the outer face of the mass of clay which passes through said die, and positive means for imparting vibration to said wire.

850,513. Tile-Machine. William H. Beery, Celina, Ohio. Filed Aug. 11, 1906. Serial No. 330,267.

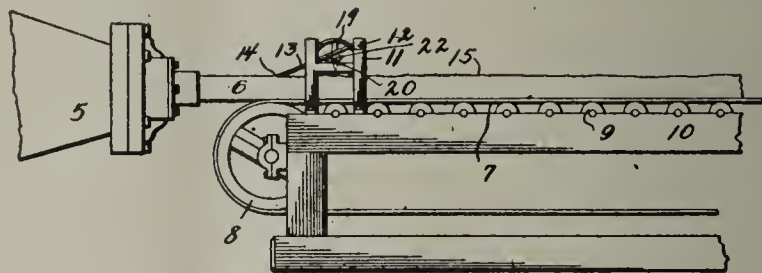
Claim—A tile-machine including a vertically-movable core and an adjustable core-guide.

A tile-machine comprising a frame having sills, rollers journaled in said sills, a pair of uprights connected with said sills and having a cross-head, an adjustable core-



suspension-rods, means for raising and lowering said core and plunger, a carriage mounted upon the rollers of said sills, a pallet mounted upon said carriage, a jacket mounted upon said pallet and having removable hinge-rods, and hooks connected with said sills and engaging said hinge-rods for locking said jacket in position.

850,428. Device for Making Ornamental Brick. Alex H. Grant, Middleport, and Milton N. Grant, Columbus, Ohio, assignors to The Columbus Clay Products Company, Columbus, Ohio, a corporation of Ohio. Filed Jan. 21, 1907. Serial No. 353,232.

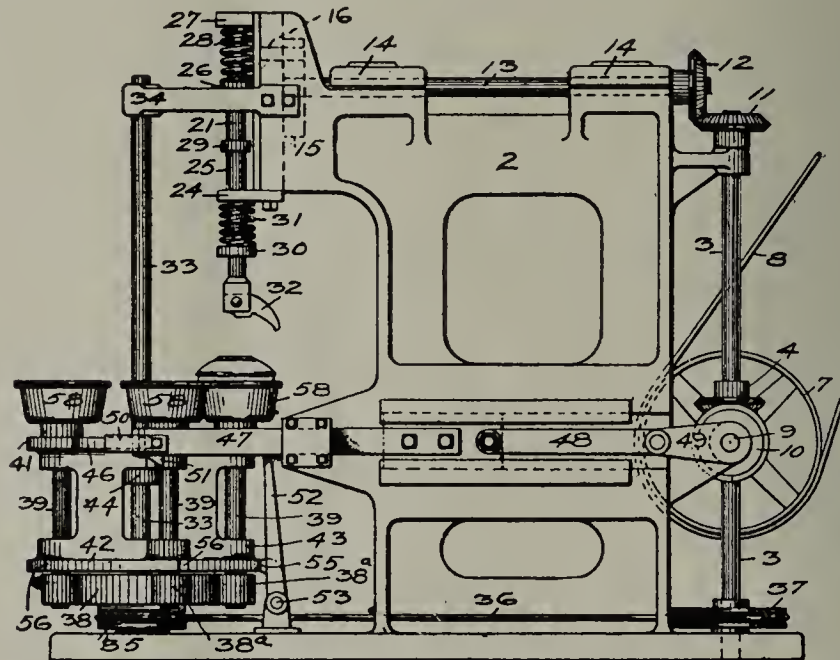


Claim—In a device of the character described, the combination with a machine adapted to discharge a continuous mass of clay therefrom, of a plate pivoted above said mass of clay, and the free edge of which engages the face of said clay, and means for imparting rapid vibratory movement to said plate.

In a device of the character described, the combination with a conveyor adapted to support a moving mass of clay, of a frame, a plate pivoted at one edge in said frame and above said mass of clay, the free edge of said plate engaging the upper surface of the mass of clay, spring means for holding the free edge of said plate into engagement with the mass of clay, and a rotative member adapted to impart a rapid vibratory movement to said plate.

851,558. Machine for Forming Plastic Articles. William Polk, East Liverpool, Ohio. Filed Mar. 24, 1906. Serial No. 307,884.

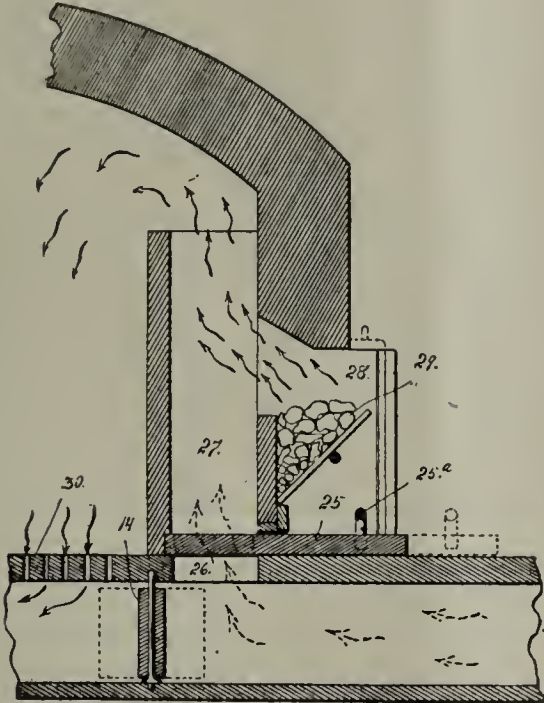
Claim—In apparatus for shaping or forming plastic articles, the combination of a suitable frame, a support for the article, mechanism for rotating said support, a shaft, an eccentric on said shaft, a rod, a shaper on said rod, connections between said eccentric and said rod, means for checking the downward movement of said rod before said eccentric completes its stroke, and means for taking up the movement of the eccentric during this period.



In apparatus for shaping or forming plastic articles, the combination of a suitable frame, a vertical shaft, means for driving said shaft, a table loosely mounted on said shaft, a series of spindles on said table, a friction wheel on said shaft, friction wheels on said spindles engaged by said first wheel, supports for the articles carried by said spindles, a reciprocating shaper above said table, and means for imparting an intermittent movement to said table.

852,404. Brick-Kiln. Edward Weiss, Denver, Colo. Filed Feb. 5, 1906. Serial No. 299,465.

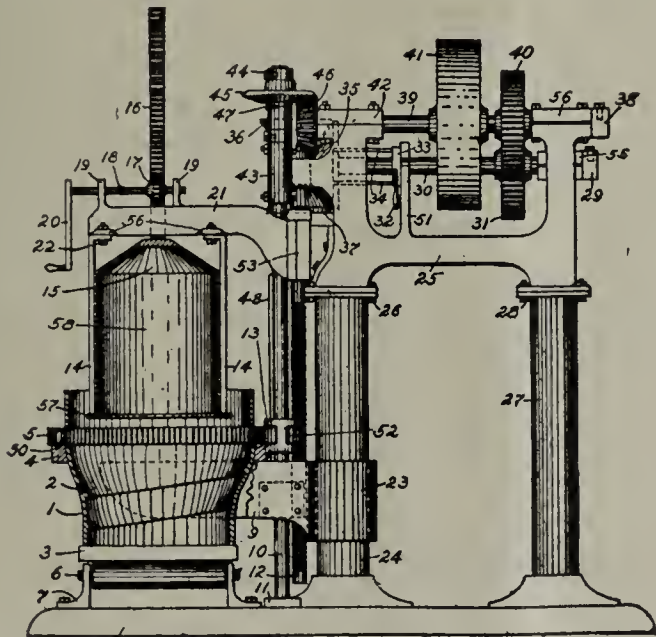
Claim—The combination of a brick kiln having a fireplace, an underground flue below the fireplace and communicating therewith by a valve controlled port, a damper located in the flue between the port and the bottom of the kiln which is perforated to communicate with an extension of the flue on the side of the damper opposite the port, and another kiln communicating with the first named kiln by way of the flue and port.



In a brick kiln construction, the combination of a number of kilns, a series of underground conduits, the kilns being provided with perforated bottoms communicating with the said conduits, vertical dampers journaled in the conduits, and ports formed in the bottom of the kilns, the latter being provided with fireplaces communicating with the said conduits through the said ports, and horizontally disposed dampers for controlling the said ports located between the flues and the fire places of the kilns.

852,095. Tile-Machine. Charles L. Baldwin, Waterloo, Iowa. Filed Feb. 5, 1907. Serial No. 355,835.

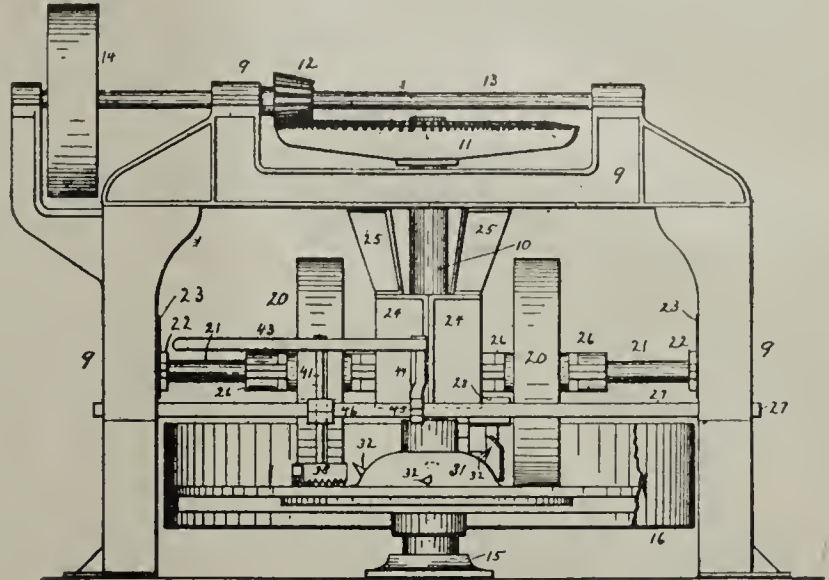
Claim—In a tile-machine, in combination, an outer former-casing adapted for simultaneous rotatory and progressive longitudinal movement, and a mold casing contained therein.



In a tile-machine, in combination, an outer rotatable casing, means for imparting longitudinal movement to said casing in either direction along the line of its axis, a removable inner casing therein and spaced apart therefrom, a removable base-plate for said casings, and means for moving said inner casing in and out of said outer casing independently of the movement of the latter.

852,160. Dry-Pan Crusher. Jacob W. Boltz, Topeka, Kan. Filed Nov. 28, 1906. Serial No. 345,483.

Claim—The combination of a frame, a vertical central shaft, a circular pan secured to the shaft and having an outer grated portion, a wearing-board, and a conical hub, mullers mounted loosely on the wearing-board to crush the clay, and plows to force the clay onto the wearing-board and under the mullers; with projections from the conical hub; and a toothed implement resting on the grated portion and diagonally disposed so as to push the larger lumps toward the wearing-board.



The combination with a frame, a vertical central shaft, a circular pan secured to the shaft and having an outer grated portion, a wearing-board, and a hub, mullers loosely mounted on the wearing-board to crush the clay, and plows to force the clay onto the wearing-board and under the mullers; of projections on the hub between the mullers and the shaft.

CONTINUOUS KILN FOR BURNING SEWER PIPES.

There are two kinds of kilns which could be used for burning sewer pipe successfully, the chamber continuous kiln with down-draft principle, and the continuous kiln fired with gas, including this condition, that all chambers can be separated from the continuous principle without interference as to the balance of the kiln. The saving on strength and stiffness, as in wood that is heated or steamed fuel is about fifty per cent. against periodical kilns. In the continuous kilns with down-draft principle we have either the firing from top or the gratebar system. Both systems are used by the great sewer pipe factories. In these kilns the chambers are so arranged that each can be taken out of the continuous arrangement after salting. For a good salt glaze one of the first principles is the right mixture of clays; second, the temperature at which it should be burned. Care should be taken that the bottom arrangement is such that there is not much difference between top and bottom. Another point which should be taken care of, is that it is useless to try to salt glaze sewer pipe when the body is not fully vitrified, as the results with a porous body are not good.

Messrs. H. C. Carrol and Sons, Philadelphia, Pa., have received from the Henry Martin Brick Machine Manufacturing Company, Lancaster, Pennsylvania, two of the modern "Martin" machines with combination Horizontal Pug Mill. This will be used in combination with their new equipment.

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JUNE 29, 1907.

No. 12

"I like to read American advertisements. They are in themselves literature, and I can gauge the prosperity of the country by their very appearance."—William E. Gladstone.

When times are dull and people are not advertising is the very time that advertising should be the heaviest. Ninety-nine out of every hundred merchants advertise most when there is least need of it, instead of looking upon advertising as the panacea for their business ills.—John Wanamaker.

Some men are willing to do anything—except work.

Few men would borrow trouble if they had to give security.

Listen to the man who says things, but believe in the man who does things.

Laugh and the world may laugh with you, but it would much rather "smile" at your expense.

Fortunately but few men say what they mean—otherwise blacked eyes would be more common.

Some men stand just inside of the door ready to grasp opportunity by the back of the neck when it knocks.

The Clay Record is the only semi-monthly clay journal in America that is printed twice a month. You can receive it a year for the sum of one dollar. Don't delay sending for it. Delays are dangerous. If the value is not in it for you at the end of the year we will willingly refund your money. Subscribe now!

A GIGANTIC POTTERY COMBINE IS EFFECTED

It has just leaked out from an entirely authentic source that an enormous industrial deal which will mean the consolidation of potteries at Roseville, Crooksville, White Cottage, Logan and Buckeye Cottage, Ohio, is under way with bright prospects of being consummated within the next several weeks.

The project of effecting a combination of all the potteries of this district which manufacture utensil ware is said to have been discussed by the owners of the different institutions for the past several months with the result that a meeting was finally held at the Rogge hotel in Zanesville. At this meeting everyone seemed favorable to the project and a committee was appointed to take up the preliminary work in relation to securing appraisers and having the different factories appraised at a reasonable value. If the appraisements are satisfactory all round there is little doubt but that the combination will be effected.

The object of combining the different plants is of course to work a saving in buying raw material, in disposing of the product of the different plants through salesmen as well as other ways.

Mr. F. M. Ransbottom of the Roseville Pottery Co., which plant is named as one of those in the combine, was interviewed over the 'phone. Mr. Ransbottom had just arrived at his home in Roseville after a business trip to Akron, and declined to discuss the matter, although he did not deny that the project was on foot.

Other pottery owners, however, discussed the project freely and admitted that the consolidation would speedily be effected.

ROADS FAVOR CHICAGO MAKERS, IS CHARGE

A delegation of Milwaukee brick manufacturers went to Madison to enter a complaint with the state railroad commission regarding discriminations in freight rates in favor of Chicago brickmakers. It is alleged that the Milwaukee manufacturer is charged 5 cents for 100 pounds from this city to Wales, a distance of twenty-seven miles, while the Chicago manufacturer pays only 5 cents from Chicago to Depere, Wis., a distance of seventy-six miles.

Moreover, it costs the Chicago manufacturer only \$1 a thousand to deliver brick on cars from Chicago to Milwaukee building sites, while it costs Milwaukee makers as high as \$1.50 a thousand for team delivery.

In addition to this, it is pointed out that it takes only three days to burn Chicago brick, because of the peculiar quality of the clay used, while it takes Milwaukee makers about two weeks. Fuel and labor, too, have advanced in a manner to painfully ruffle the brickmaker's temper.

FIRE BRICK WORKERS STRIKE

Two hundred men employed at the Portsmouth, O., fire brick plant of the Harbison-Walker Company, struck because of the refusal of the company to readjust the wage scale. The men claim they have been receiving from 15 to 25 cents less per day than other brick workers in this locality. The plant involved is the largest in the Portsmouth district.

OBITUARY

Cornelius Nist, a retired brick manufacturer of Louisville, Ky., died from a complication of diseases the seventh of June.

Samuel Palmer, the manager of the works of the Durango (Colo.) Pressed Brick Co., died from the results of falling onto one of the machines and terribly mangling both his legs and arms. He was 65 years of age, and leaves a wife and children.

Jacob Kline, the well known brick manufacturer, died at his home in Port Ewen, N. Y., aged 75 years. He leaves five children, two daughters and three sons. John D. is engaged in brickmaking at Port Ewen.

ACCIDENTS, DAMAGES AND LOSSES

J. H. Snyder was injured at the plant of the Iola (Kansas) Brick Co. while working about the machinery.

The Colored Laboring Men's Brick Association, Houston, Texas, is to be dissolved, and the assets distributed.

J. W. Dudley, who works for the Atlas Press Brick Works at Ferris, Texas, was caught in the machinery and very badly injured.

Merrill Mann got his leg caught in the gearing of a cutting table at the Franklin Brick Co.'s plant at Taylors, Ohio, and was very badly injured.

George Duncombe, proprietor of the Meyersdale (Pa.) Brick Works, was severely injured while adjusting a belt when the engine was started.

Elihu Saffle, an employe of the Thornton (W. Va.) Fire Brick Co., was killed on the famous curve bridge, while on his way to visit his grandmother.

Frank P. Fay has sued James Green, president of the Laclede Fire Brick Co., St. Louis, Mo., for \$50,000 claiming same for making the sale of the plant.

John Pangburn, a carpenter employed by the Cary Brick Co., at Newton Hook, N. Y., fell from a scaffold and received a broken leg and other bodily injuries.

The estate of Joseph Streicher has entered suit against the Davenport (Ia.) Brick & Tile Co., claiming \$10,000 damages for his death while at work for the company.

Mrs. Caroline Bowen has filed suit against the Newport (Ky.) Pressed Brick & Stone Co., to recover \$5,000 as damages done to her property which is located at the foot of the hill and below, the defendant's property, claiming the natural drainage injures her property.

Judgment has been entered by default against the Kingsland (N. J.) Brick Co., a New York corporation, for \$81,792. Warren Ross is president; C. Edward Ross, vice president, and Z. Tannenbaum, treasurer. The judgment was in favor of Rachel Tannenbaum.

TOLEDO CONCERN SURRENDERS CHARTER TO STATE.

The Toledo (Ohio) Brick Supply company ceased to exist when an official certificate surrendering the charter was filed with the secretary of state. A month or so ago the company quit business, but was unable to be legally dissolved until the state had been given 30 days' notice. All obligations have been settled and the affairs of the company wound up. The concern had been in existence ten years.

FIRE! FIRE! FIRE!

The plant of the Granite Brick Co. at Hastie, Ia., was totally destroyed by fire. Plant fully covered by insurance. The company's Des Moines office is at 9th & Vine Sts.

One of the sheds of the Stutton & Harrisburg (Pa.) Brick Co. took fire and was burned.

Fire destroyed the plant of the Memphis (Tenn.) Stoneware Co. in South Memphis. Loss, \$50,000. Very little insurance was carried.

The large steam pottery belonging to John Donalson, known as the Stevens Pottery at Winnsboro, Texas, was burned. Loss is complete. Very little insurance was carried.

WISCONSIN BRICKMAKERS WIN IN LONG FIGHT.

Reduction of from 10 to 25 per cent in freight rates on shipments of brick between points in Wisconsin and an advance of one-half cent per hundred pounds between Chicago and Milwaukee and Racine and of one cent from Chicago to other points in this state have been granted by railroads in response to demands of the Wisconsin Clay Workers Association and the new schedule means much to the association members and to the Wisconsin brick industry. George W. Kennedy manager of the Manitowoc Clay Product Co., was chairman of the committee which submitted the association's demands and secured the equalization of rates.

Final settlement of the controversy between the railroads and Clay workers was reached at Madison when the committee of which Mr. Kennedy is head, agreed to accept the new schedule offered by the roads. For more than a year the brick manufacturers of Wisconsin have been urging the railroads to reduce rates in this state on brick so that they could compete with Chicago manufacturers in Wisconsin territory, but the roads steadily refused to do so until the manufacturer appealed to the state railroad commission for an order to compel a reduction in rates. A previous compromise offer was rejected by the committee which finally took the case to the railway commission on a complaint and it was to have been heard, but a conference was held and the new schedule agreed to.

IDEAL CONCRETE MACHINERY COMPANY PUBLISHES "IDEALITE."

The manufacturers of the Ideal Concrete Hollow Block machines, which are made at South Bend, Ind., by the Ideal Concrete Machinery Company, have such a demand for their goods that they now publish monthly a bulletin called "Idealite" and distribute it free of cost among its customers.

They took this action because of the policy to keep in touch with their customers, and in this manner advise them of everything new that they produce, so as to keep their machines and their customers in the lead they have gained.

The latest move is that the company has purchased the patents, stock and good-will of a well known cement machinery company at Jackson, Mich., and will hereafter sell and manufacture their sills, steps, sidewalk and post molds. This company has something beside machinery in their factory and that is brains.

NOTED MONUMENT HILL MAY SOON BE CONVERTED INTO BUILDING BRICK.

Monument Hill in Allegheny, Pa., if the present plans go through, is to be converted into brick. The unsightly pile of clay that has stood since prehistoric races roamed over the North Side will soon be a thing of the past, if a plan formulated by Mayor Charles Kirschler is carried into effect.

For a decade Monument Hill has been an eyesore. Various ways of improving the huge pile of clay to make it compare with the surroundings have been considered, but nothing was ever done.

Except to view the soldier's monument on the mount, it is scarcely ever visited with the exception of "dead heads" who climb its precipitous sides to witness a ball game at the park below. In fact, Monument Hill has done no good service since it was a lookout camp by the Red men.

For some time several brick manufacturing concerns have expressed a desire to convert the clay of the hill into an article of commerce. This plan is the one in high favor with Mayor Kirschler and some prominent members of Councils.

Mayor Kirschler thinks that the city can derive enough revenue from the brick companies, who are anxious to reduce the hill to a level with the abutting street, to make the necessary improvements required in the other parks and also for an extension of West Park. He said:

COGENT ARGUMENTS MADE.

The removal of Monument Hill has been in my mind for the past three years. As that land stands now it is of no benefit whatever to the city as a breathing spot and it is almost impossible of access to young children and invalids.

The proposition was made to the city some years ago to have the hill torn away by a corporation in the brick business. It was turned down by the city, although there was no vigorous opposition to the plan. If brick kilns were established for the purpose, it would no doubt take at least several years for the hill to disappear, but the city would at the same time be acquiring more park property. In addition, I am satisfied that a large amount of revenue could be derived.

SHIP BRICKS TO CUBA.

The British steamship *Caribee*, sailing from New York for Havana, carried away a cargo of brick. This is an unusual freight for a steamship to handle, and even in the memory of Bill Quigley, the Battery boatman, who is an authority on the subject, such a thing has not occurred before.

"I wonder what they are going to do with all those brick in Cuba," mused Bill, meditating on the circumstance. "Perhaps they will build another Morro Castle or, better yet, use them as weapons in the next revolution."

Usually it is the prosaic and blunt lined schooner that conveys such building material. Wonderment and many conjectures were expressed by the watermen at Erie Basin, where the *Caribee* loaded. One day a revenue cutter appeared in the offing and the air in the neighborhood was thereupon fraught with suspicion. "Perhaps," ventured one man, "she is a filibuster."

MR. ROBERT E. EMANUEL, OF MALLORY, MEETS DEATH UNDER CAR WHEELS.

Latta, S. C., June 24.—The tragic and untimely death under the car wheels of Mr. Robert C. Emanuel, a popular young business man of Mallory, and proprietor of the Mallory Brick Manufacturing Company, occurred here this morning. Mr. Emanuel came this morning to Latta on the train. Just after stepping off the car the train backed towards the depot. Mr. Emanuel walked on ahead, and when the brakeman called out to him to look out, to get out of the way, the young man deliberately stepped in front of the moving train and the first truck passed over him without touching the body. He then moved himself across the rail and was torn and mangled horribly.

Mr. Emanuel was twenty-five years of age and was married about a year ago to Miss Willie Thompson, of Rowland, N. C. She, with his mother and sister, Mrs. R. C. George, of Seller's, survives him. His body was taken to Mallory and laid beside that of his father, in the Brownsville cemetery.

USE OF PEAT IN BRICKMAKING.

In Germany they are mixing coal and peat, making a compressed mixture, which has been used as fuel in a brick yard, with a result so favorable that it will no doubt open a new field for the use of peat fuel in brick manufacture. In the neighborhood of Jevers, Oldenburg, an excellent heavy blue clay is found, which was considered suitable for the manufacture of hard clay bricks. All efforts to manufacture such bricks from this clay proved unsuccessful until a mixture of one part of peat and ten parts of coal was tried as fuel. The result was a hard, brown brick, instead of the light red brick which was produced formerly. The experiments were repeated until at last a first-class brick was produced.

W. J. PARRISH BUYS POWHATAN.

W. J. Parrish, of the Fulton Brick Company, Richmond, Va., has purchased the famous Powhatan home, which is just below the Cedar Works. The property was for years owned by W. J. Westwood, the Church Hill capitalist. The price paid for the property is said to have been \$21,000.

Tradition says this is the site of the rescue of Captain John Smith by the Indian princess, Pocahontas, when old Chief Powhatan was ready to brain him. The stone on which Smith's head lay was bought and is now on exhibition at the Jamestown exposition.

The land is said to contain an exceptionally fine quality of brick clay. This, it is understood, will be utilized by the Fulton Brick Company.

HUDSON RIVER BRICKMAKERS' WAGES INCREASED.

The wages of the employes on the Coeymans, N. Y., brick yards were voluntarily increased by all the firms last week fifteen cents per day. It is said the manufacturers there are paying the highest wages of any yards along the river, the men receiving 20 to 40 cents a day more than they do down the river.

INTERSTATE COMMERCE COMMISSION DECIDES A BRICK IS A BRICK, NO MATTER HOW USED.

Washington, June 27.—The Interstate Commerce Commission decided that the classification of commodities must be based upon a real distinction from a transportation standpoint and not be dependent upon the purpose for which the commodity is to be used after its arrival at its destination. The classification on the various kinds of brick from Ohio to New York City was involved. The carriers imposed different rates for fire, paving and building brick.

The reasonableness of the different rates was not questioned by the shipper, but the diverse classification for the various kinds of bricks which were not materially different from one another as far as the service of the carrier was concerned. The commission held that the uses to which the brick were to be put was not a sufficient basis for a difference in the rates, and that a difference founded upon a distinction that has no transportation significance was wrong.

CLAYS OF THE ST. LOUIS DISTRICT, MISSOURI

In the year 1905 St. Louis produced and sold about \$5,000,000 worth of clay products—approximately one-thirtieth of the entire output of the United States. A very large proportion of these are made from fire clays dug in a single section within the city limits. A brief description of the clay resources of the St. Louis district, prepared by N. M. Fenneman, is included in the United States Geological Survey's "Contributions to Economic Geology, 1906" (Bulletin 314), just published and obtainable on application to the director of the survey, at Washington, D. C. The paper contains also references to available beds of shale and brick clay near the city and a map showing the locations of the fire-clay mines.

TO MAKE BRICKS IN JAPAN.

Plans are on foot for the organization of a Japanese enterprise called the Manchuria Joint Stock Brick Manufacturing Co., with a capital of 1,000,000 yen (\$500,000). The company plant will be located at Choushuiton, in the Kwantung Leased Territory, and the latest model of Hoffman's brick-making machinery will be installed. Six other companies with a smaller amount of capital also intend to engage in this industry. In view of the large amount of construction that will be undertaken in the future, both in connection with the railways and in the many cities newly opened to foreign residence and trade, this enterprise should be a very profitable one.

BRICK CONTRACTORS PERFECT ORGANIZATION.

The Dayton (Ohio) Brick Contractors' Association was formed in its rooms in the Patterson building, of leading brick contractors and manufacturers, for the consideration of trade matters strictly. The following officers were elected: President, Herman Teigler; vice president, Joseph R. Boren; secretary, Charles C. Waltz; treasurer, Perry Bowman. Regular meetings will be held in the Patterson building on the first and third Wednesday nights of each month.

POTTERY NEWS ITEMS

The C. D. Hayten Pottery Co., Benton, Ark., is now being operated by foot power.

The Ottumwa Pottery & Clay Products Co. has been incorporated with \$60,000 capital stock at Ottumwa, Ia.

New York capital will build a pottery that will cost \$50,000 at a small station called Wales, Tenn., near Pulaski.

The Florida Clay Co., Yalaha, Fla., is remodeling its plants, and will soon be ready for extensive operations.

Mr. Jarvis, of East Liverpool, O., is at Cheboygan, Mich., consulting with the architect in regard to the new building for the pottery.

The Cameron (W. Va.) Pottery Co. is now known as the Egan Manufacturing Co. The plant has several large contracts and is in full operation.

The foundations, 430x140 feet, for the new pottery at El Reno, Okla., are completed. The buildings will be two stories high and cost \$200,000.

Another pottery is to be built at Sebring, O., bricklayers have already been secured to put up the kilns, etc. The plant will manufacture electrical insulators, etc.

The E. E. Spencer Porcelain Co., Whitehall, Ill., has been incorporated with \$2,500 capital stock. Incorporators: Geo. A. McCorkle, Benj. Wolf and William V. Brothers.

Arrangements are being made to take the plant of the Bell Pottery Co., Columbus, O., out of the hands of the receiver. It is expected a sale will be ordered within a few weeks.

The Keyser (Md.) Pottery Co. has been reorganized, the following being the new officers: J. Z. Terrell, pres.; Dr. L. L. Edgell, secretary and treasurer, and M. H. Edgell, manager.

The Augusta (Ga.) Chinaware Co. has been incorporated with \$25,000 capital stock, by Roy Goodwin, of Augusta, and Collin McLean. It will enlarge the Georgia-Carolina Pottery. Mr. McLean is the manager.

Ione, Cali., is to have a pottery. Carver Hidecker, of Glen Ellen and Oakland, is at the head of the enterprise. Mr. Cunningham, who is superintendent of the Glen Ellen works, will move to Ione and be superintendent of it.

The Harley Pottery Co., Nashville, Tenn., has ordered new machinery that will almost double the capacity of their pottery. Next year the company expects to build another large plant and operate same under the same management.

The large plant at Chaseland, north of Columbus, O., formerly operated by the Columbus Pottery Co., has been entirely rebuilt by the American Mutual Pottery Co., which was organized by James M. Loren and others to take over the plant after it was partly destroyed by fire.

KAISER ADVERTISES HIS POTTERY PRODUCTS.

The versatile Kaiser, as a new proof of his aptitude for business, is advertising his pottery works at Kadinen by showing a special display of the goods at a fashionable shop in Berlin.

The show, which was advertised in the semi-official Berlin newspaper, included terra cotta and majolica tiles, vases, busts, statuettes, as well as more useful articles like buckets and flowerpots.

SAND OR LIME BRICK OR BLOCK NEWS

William H. Wild, Troy, Ill., is making plans to establish a concrete tile and paving block factory.

Ionia, Mich., is to have a sand-lime brick factory which is to be built by Manistee and Grand Rapids parties.

Parsons & Edwards, Franklin, Ind., have added a concrete brick machine to their equipment of cement block making.

The Paducah (Ky.) Sewer Pipe & Block Co. is now in full operation, W. L. Bower is president, and Robert Bower in charge of the plant.

The plant of the Watertown (S. Dak.) Pressed Brick Co., which was recently destroyed by fire, is to be rebuilt and construction work is under way.

Hutchinson, Kansas, Commercial Club is after a sand-lime brick plant for that city. Tests have been made from the sands which are satisfactory.

The Holland-Manistee Brick Co.'s plant at Holland, Mich., is being overhauled and equipped with new machinery and labor-saving devices.

The Schwaz System Brick Co., of 24 State St., New York, are erecting a sand-lime brick plant at North Battleford, Sask., at a cost of about \$75,000.

The Cement Block Co, Island Heights, N. J., has been incorporated with \$25,000 capital stock. Incorporators are Wm. A. Parker, John Dunegan and W. L. Parker.

The drying cylinder at the plant of the Schenectady (N. Y.) Sandstone Brick Co. was opened by mistake and blew up, killing several people and injuring the plant.

The organization of a sand-lime brick plant at Macon, Ga., is in progress by well known local capitalists and Bibb county sand will be made into brick. A large plant will be built.

Plans are on foot to organize a large stock company to take over the Webb City, Mo., tiling brick business, owned by A. M. Wagner. K. C. Buckeye, of Joliet, Ill., is interested.

The Vulcan Stone & Tile Co., Buffalo, N. Y., has been incorporated with \$5,000 capital stock. The incorporators are Emil Brandenburg and Chas. H. North, of Buffalo; A. O. Stockel and J. E. Eisele, of West Seneca.

Several big companies have been formed to buy territory for the manufacture of brick on machines made by The Enamel Brick & Concrete Machinery Co. of Des Moines, Ia. The New England states and the Canadian rights are already secured.

The Luverne (Minn.) Pressed Brick Co. has been incorporated with \$55,000 capital stock and will build at once a sand-lime brick plant. Those interested are Judge P. E. Brown, A. D. LaDue, W. E. Green, E. A. Brown, S. B. Nelson, V. C. Mead, C. A. Palmer and others.

The Atlas Brick Co., El Paso, Texas, manufacturers of sand-lime brick is the latest industry for that city. The Schwarz System is used and the capacity of the plant is 50,000 brick daily. The directors are F. B. Stuart, A. Courchesne, S. H. Sutherland, W. W. Turney and W. F. Barnes.

MISCELLANEOUS ITEMS

Ponca City, Okla., clays have been tested with good results and it is expected a brick plant will be built there.

The Middleton (Idaho) Brick Co. is now turning out brick which will be used to build a hotel and business block.

John Harke, John Pugh and Henry Hege, of Lexington, N. C., have organized and are now operating a brick plant.

The Georgia Brick Co. will install a dryer in its plant at Adairsville, Ga., that will have a daily capacity of 30,000 brick.

The Stovall (N. C.) Brick Company is in the market for a disintegrator with a capacity to make 25 to 30 thousand brick daily.

The Carbon Limestone Co., Youngstown, O., will erect a large brick works near the state line between Quaker Falls and Lowellville.

\$400,000 worth of work has been tied up at Jackson, Miss., on account of scarcity of brick. Within the last 10 days the famine has been lifted.

The Lehigh Sewer Pipe & Tile Co. has been organized at Augusta, Maine, with \$400,000 capital stock. The plant will be at Lehigh, Iowa.

The Brenham (Tex.) Brick Co. is building a tramway 3,000 feet in length to reach the clay beds so as to operate the capacity of the plant.

Barkley Bros., Greenville, Ky., will install a gasoline engine and put in an additional brick machine to increase their plant more profitably.

The new brick plant at Lexington, Ky., on 7th street, near the L. & E. Railway Co.'s shops, is now in full operation, turning out 40,000 brick daily.

G. W. McClelland has offered to put in a 100,000 brick daily capacity brick plant at Cherryvale, Kansas, if the town will furnish a site for the plant.

C. L. Martin and Dr. W. E. Fish, of Anita, Ia., will at once begin operations on a brick plant which they will install at Aberdeen, S. Dak., north of the gas works.

The promoters of the new brick plant at Ft. Thomas Sta. Newport, Ky., are threatened by the residents with an injunction to stop burning operations soon as they start.

The Brown Clay Co., of Suffolk Co., N. Y., has filed a certificate with the state. Capital stock, \$60,000. Incorporators are H. C. Brown, Juliet H. Brown and J. C. Brown.

The Hudson Valley Brick Co., Mechanicsville, N. Y., has been incorporated with \$80,000 capital stock. Incorporators are Wm. H. Allen, Walter C. Crombie, F. H. Longstuff and others.

David Sanders has formed a \$100,000 company to build a brick plant at San Antonio, Texas. He is to be the secretary of the company. The company is called the San Antonio Brick Co. Geo. H. Craft is president.

The Ashaway (R. I.) Clay Co. has been organized with \$50,000 capital stock and will build a face brick plant. The officers are Geo. L. Babcock, of Plainfield, N. J., president; George Burdick, of Potter Hill, vice-president; Frank Hill, of Ashaway, secretary and treasurer, and Earl J. Robinson, of Friendship, N. Y., manager.

J. W. Craycroft has shipped brickmaking machinery to Modesto, Cal., and will operate a plant there.

Work on the new plant of Wm. W. Ellis & Son at Canton, Ill., is progressing and the plant will soon be in readiness to operate.

The Iron Clay Brick Co., Columbus, O., are now receiving orders for fall trade and the company has 150 cars placed in advance.

The National Drain Tile Co., Terre Haute, Ind., has purchased 80 acres of shale near Streator, Ill., and will build a \$100,000 drain tile plant.

Clinton Campbell, a Phoenix, Arizona, contractor, has leased the Tempe (Arizona) Brick Works and will start up same at once in order to get brick for his contracts.

The Ross-Keller Triple Pressure Brick Machine Co. has just completed a four mould plant for the Carrollton Pressed Brick Co. of Carrollton, Texas. The first kiln has been opened and shows a high grade red face brick.

The Ross-Keller Triple Pressure Brick Machine Co. has just contracted with the Lebanon Pressed Brick Co. of Lebanon, Ohio, for the installation of a complete six mould brick plant with a daily capacity of 30,000 pressed brick.

The Fultonham (O.) Brick Co. has been reorganized. T. F. McClure, of T. F. McClure & Sons Co., Cincinnati, O., is president; E. E. McClure, vice-president; J. M. Quill, 2nd vice-president; Frank T. Dinsmore, secretary, and Frank H. Kirchner, of the Kirchner Construction Co., treasurer. E. E. McClure and J. W. Harbarger are in charge of the Columbus, O., office, which is in the Harrison building.

Runge, Texas, is to have a new brick works if all reports are true.

The capacity of the Granite Brick Co., of Columbus, O., is to be doubled.

The finishing touches are being made to the plant of the National Glass Brick Co., Connellsville, Pa.

Building brick are now being made at the plant of the Peerless Brick Co. at Williamson, W. Va.

The Waynesburg (Pa.) Brick & Stone Co. have installed a 30 horse-power gas engine in its Smith creek plant.

The Leavittsburg (O.) Brick Co. purchased at trustee's sale the plant of the B. K. Enamel Brick Co. for \$14,000.

The Suburban Brick Co. are unable to run their Martin's Ferry, O., plant in full force on account of the scarcity of help.

Mr. John Gibson, Fromberg, Montana, has purchased from The Henry Martin Brick Machine Manufacturing Company of Lancaster, Pennsylvania, a complete "Martin" Horse Power equipment.

The Lunenburg Brick & Tile Co., Tinkling, Va., has been incorporated with \$25,000 capital stock. Marvin Smithey is president, L. W. Bridgeforth vice-president, D. F. Kennedy secretary and treasurer.

Mr. George C. Pedrick, Flemington, New Jersey, is installing one of the "Martin" Latest Improved Style "A" Steam Power Brick Machines in combination with a "Martin" Improved Clay Screen, purchased from the Henry Martin Brick Machine Manufacturing Company of Lancaster, Pennsylvania.

The New San Francisco Continuous Kiln

is the only CONTINUOUS KILN having regenerative furnaces for burning bricks with CRUDE OIL or POWDERED COAL

This kiln has the greatest thermic efficiency, for the following reasons:

FIRST—A perfect system of regulating the velocity of gases through the kiln.

SECOND—No excess of air, such as is required in UP-DRAFT or DOWN-DRAFT kilns.

THIRD—Perfect air recuperation.

FOURTH—Perfect combustion.

FIFTH—Loss by radiation reduced to a minimum.

SIXTH—No cold air admitted with the fuel in the combustion chambers.

SEVENTH—Heat generated instantaneously.

EIGHTH—No delays, no waiting for the coal or other fuel to ignite, as in the ordinary continuous kiln.

NINTH—The burning bricks receive the full benefit of all the heat produced, as the combustion chambers are contiguous to the kiln.

TENTH—The amount of heat generated is at least 100% greater than that produced by coal screenings dropped between the burning bricks in a given length of time, in the ordinary continuous kiln.

CONSTRUCTION

This kiln can be constructed with 10% less material than the ordinary continuous kiln.

The outside and inside walls, etc., are left down to a point four feet below the coal-floor line of the ordinary continuous kiln, the arch only being built above this line.

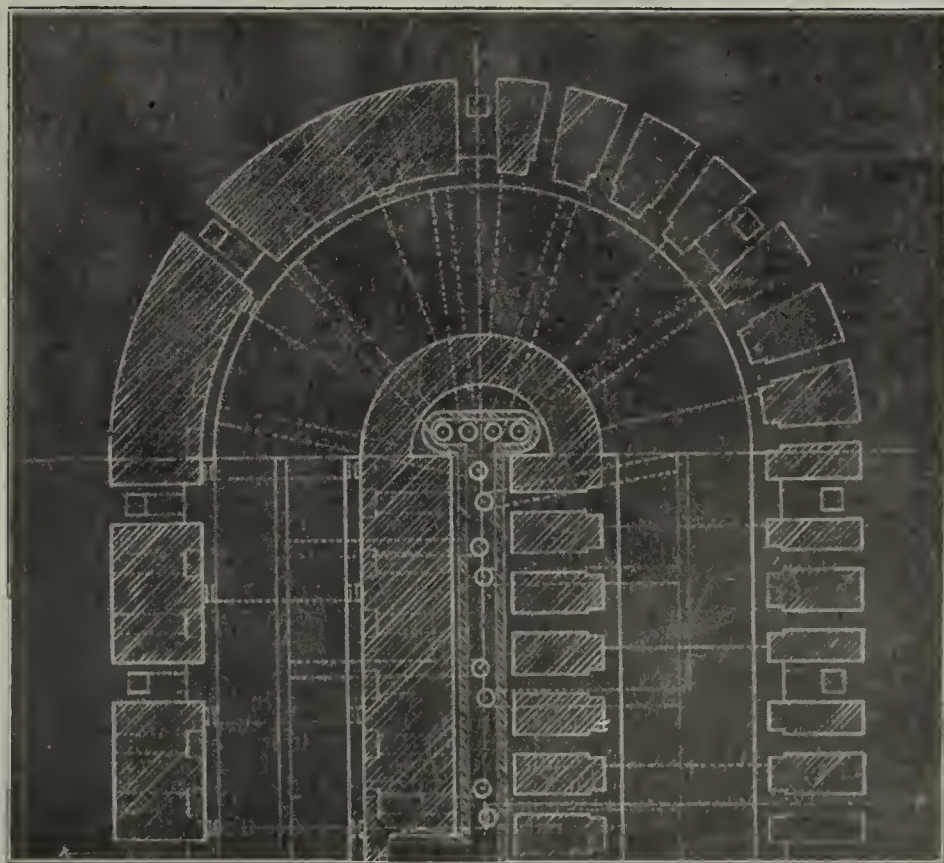
There are no BAGS or BAG WALLS to take down and rebuild when the kiln doors are opened and sealed up.

Has no complicated system of flues.

Has no complicated system of GAS PRODUCERS.

Can be arranged for utilizing the surplus heat with a blower, no chimney being required in this case.

This system applied to a HOFFMAN KILN will increase its capacity at least 100 per cent.



WILLIAM A. BUTLER, Patentee, 34 Parkside Ave. San Francisco, Cal.

W. W. Denham is trying to interest Dallas capital in the establishing of a brick plant at Goliad, Texas.

Glenn H. Dobbs, of Camden, N. J., has leased the brick works of Harry Robinson at Chester, Pa., and will operate it with improved machinery.

J. H. Palmer, of Danville, Ill., has bought controlling interest in the Western Silica Works at Attica, Ind., and will put the whole plant on a good basis.

The plant of the Mansfield Brick Co. has been put in operation at Rockmart, Ga. Robert H. Brown, of Atlanta, is president and organizer of the company.

The Henry Martin Brick Machine Manufacturing Co., of Lancaster, Pa., have recently shipped to Messrs. O'Connor Bros., Red Bluff, California, an outfit of Horse Power Brick Machinery.

The Leesburg Brick Co., Leesburg, N. J., have recently installed a complete outfit of "Martin" Soft Mud Brick Machinery, purchased from the Henry Martin Brick Machinery Co., of Lancaster, Pa.

The Dungan-Booth Brick Co., Seven Mile Ford, Va., has been organized by J. Dungan, of Seven Mile Ford, C. B. Booth, of Knoxville, Tenn., and Joel Booth, of Chilhowie, Va. They will establish a 40,000 brick daily capacity plant.

The Henry Martin Brick Machine Manufacturing Co., of Lancaster, Pa., has just shipped to Mexico one "Martin" Latest Improved Animal Power Brick Machine. This shipment was completely dismantled and the machine put up in small packages for transportation over the mountains of Mexico on mule back.

Alex W. Mass, of New Orleans, La., is organizing a company to manufacture fire brick, sewer pipe, etc.

The directors of the Illinois Brick Co. have declared a quarterly dividend of 1 per cent, payable July 15th.

D. G. Loomis & Sons, Montreal, Que., contractors, have purchased property at Cote St. Paul, Que., and will establish a large brickmaking plant.

Messrs. Porter & Taylor, who own the Brownwood (Texas) Brick Works, is installing some machinery and have just completed a large storage building.

The Creedmoor (N. C.) Brick & Lumber Co. has been incorporated with \$25,000 capital stock by T. O. Pomeroy, A. B. Nicholson and Heenan Hughes, of Graham.

The Laclede-Christy Clay Products Co., St. Louis, Mo., has bought a block of ground bounded by Elizabeth, Columbia and January avenues and Wood street, paying \$41,000 for it.

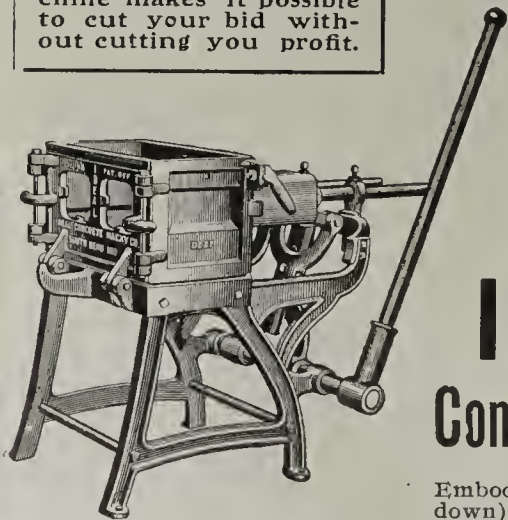
Clayton Wagner has bought the tile factory at East Germantown, Ind., from P. Franzman and now is repairing the buildings and machinery. He will equip the plant with new machinery.

The Perfection Brick Co., of East St. Louis, Ill., has been organized at Belleville with \$50,000 capital stock. Incorporators are Charles A. White, Edward M. Dickerson and Helen M. Dickerson.

The Interlocking Brick Co., of New York, has been incorporated with \$10,000 capital stock. The directors are Joseph Soss and S. A. Guiterman, of New York, and Chaim Schwartz, of Brooklyn.

To Make The Winning Bid

The Ideal Concrete Machine makes it possible to cut your bid without cutting your profit.



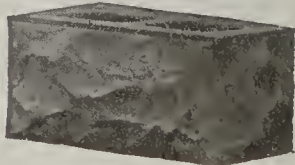
It is impossible to underbid the contractor who manufactures his own Ideal Concrete Building Blocks with an Ideal Concrete Machine.

The marvelous simplicity and rapidity of the Ideal Machine makes it possible to produce Ideal Concrete Blocks at a cost that makes the lowest bid a profitable one. May be successfully operated by any one without previous experience or other assistance.

Ideal Blocks are adapted to any possible architectural design, and excel all other materials in fire and weather-proof qualities

IDEAL Concrete Machinery

Embodies the only principle (faced down) permitting the use of rich facing material with less expensive systems of blocks—Hollow, Solid, Veneer, Two-piece, and Continuous, in various shapes and sizes. The same machine makes countless designs of face, and natural stone effect. (See illustration.) Practically everlasting. Not a chain, spring, wheel or cog in its construction. Catalog and valuable facts for builders free on application.



IDEAL CONCRETE MACHINERY CO.
Dept. W South Bend Ind.
MUSSEN LIMITED, Montreal, Canada
Sole Agents for Canada

DIRECT HEAT

DRYERS

FOR

BANK SAND
GLASS SAND
ROCK, CLAY
COAL, ETC.

All Mineral, Animal and Vegetable Matter.

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue W. C.

American Process Co.,
62-64 William St. NEW YORK CITY

The Wadsworth (O.) Brick Co. is building new kilns at its plant.

E. A. Joseph is installing machinery for a brick plant at Coal Harbor, N. Dak., on the Schutt coal mine property.

The Redwing (Minn.) Sewer Pipe Co. filed an amendment to its articles of incorporation, increasing its capital stock from \$500,000 to \$1,000,000.

The Owensboro (Ky.) Pressed Brick Co. has started up its new plant which has been building all winter. It was delayed on account of the scarcity of lumber.

The Canavera Brick Mfg. Co., Staunton, Ill., has been incorporated with \$25,000 capital stock. Incorporators are Michael Canavera, Baptiste Canavera and A. F. Helmuth.

Mr. W. J. Crawford, Palestine, Texas, has just installed a "Martin" horse power equipment for the manufacture of soft mud brick, furnished by the Henry Martin Brick Machine Manufacturing Co., of Lancaster, Pa.

A resolution has been passed by the Board of Commissioners of the Arkansas State Penitentiary to supply the Arkansas Brick & Mfg. Co., Little Rock, with 300 able-bodied convicts per day in accordance with the so-called Dickerson contract.

Mr. F. B. Davidheiser, Pottstown, Pa., who lately equipped his plant with an improved outfit of "Martin" Soft Mud Brick Machinery, has further improved his plant by adding the "Martin" Patented Rack Pipe Steam Brick Dryer System, which is now being installed by the Henry Martin Brick Machine Manufacturing Co., of Lancaster, Pa.

Jack Oeschli, of Butte, Mont., will start a brick works at Anaconda, near the Levengood ranch.

The Ida Grove (Ia.) Concrete Stone Co. has turned out their first kiln of brick with satisfactory results.

Sheaffer Bros., contractors, have begun the work on the plant of the Dillsburg (Pa.) Vitrified Brick & Tile Co.

The Commercial Club, of Hutchinson, Kansas, are on the lookout for a fine shale brick works to utilize the large deposit found there.

Several New York capitalists have secured option on 3,000 acres of clay land in Cecil County, Md., and it is expected they will mine clay on a large scale.

The new brick plant in the East End, East Liverpool, O., which proposes to make brick from broken pottery saggers, has been started on a trial test of the machinery.

The Richmond Clay Product Co. has been awarded the contract to furnish 15 miles of vitrified conduit for Washington, D. C.; also 3,000,000 paving brick for the city of Newark, N. J.

The Rushville Brick Co., Rushville, Ind., are at the present time putting in the "Martin" Patent Dryer System of 30,000 daily capacity, installed by the Henry Martin Brick Machine Manufacturing Co., of Lancaster, Pa.

The Somers Brick Co., of Atlantic City, N. J., who recently equipped their plant with a "Martin" Improved outfit of style "A" machinery, have placed their order with the "Martin" Brick Machine Manufacturing Co., of Lancaster, Pa., for a duplicate outfit of the same kind, and which is being installed at the present time.

The Ideal Brick Kiln

SHOULD BE

Cheap and durable and have a big daily capacity.

In order to save fuel it should be of the continuous type.

To produce clean colored bricks without cracks, the preliminary drying should be performed in chambers separated from the burning compartment proper, according to the principle of the common up-draft kiln.

The heat from the already burned cooling bricks should preferably be used to lighten the burning proper.

The different stages of the burning process should always be easily observable. Such one is the

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Wanted Stoneware Potter—both wheel and Kiln men, Write to

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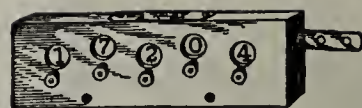
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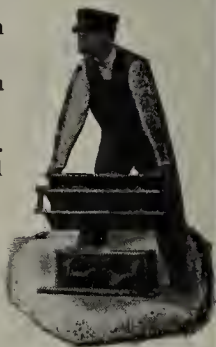
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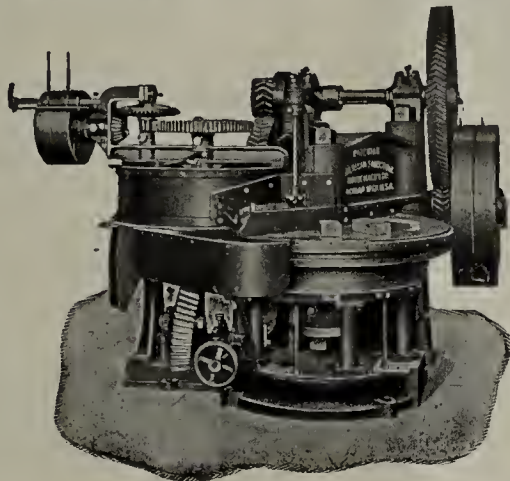
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The greatest trouble brick men have is getting hands to feed regularly—they will over feed and choke the machine break or run belts off and then sit down and rest while the owner labors to repair and start up again. Your Clay Feeder is perfect and is indispensable to any brick manufacturer who wishes to make a good brick at lowest cost.

Yours truly,

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Marion Machine, Foundry and Supply Co.
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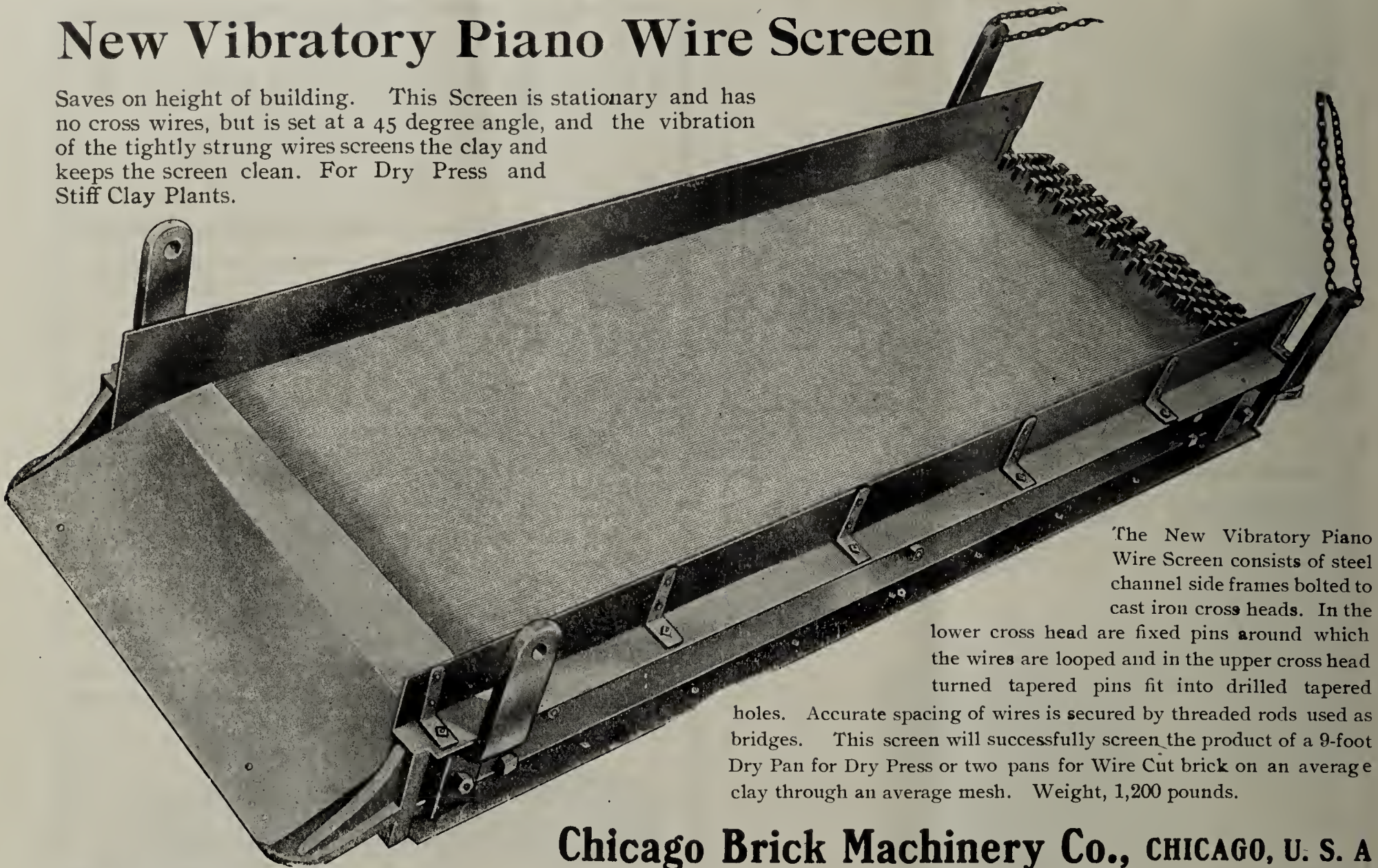
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On or prior to January 1st., 1908, we shall discontinue the manufacture of Brick Machines and brick yard supplies. We offer for sale at any fair bid our business, good will, patterns, supplies and stock on hand. Our old reliable Machines are sold throughout the entire United States without expense to us and any one who engages in manufacturing can increase their sale largely by slight effort. These Machines have been made in this factory for thirty years.

The Tiffin Wagon Company, ~ ~ Tiffin, Ohio

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Saves on height of building. This Screen is stationary and has no cross wires, but is set at a 45 degree angle, and the vibration of the tightly strung wires screens the clay and keeps the screen clean. For Dry Press and Stiff Clay Plants.



The New Vibratory Piano Wire Screen consists of steel channel side frames bolted to cast iron cross heads. In the lower cross head are fixed pins around which the wires are looped and in the upper cross head turned tapered pins fit into drilled tapered holes. Accurate spacing of wires is secured by threaded rods used as bridges. This screen will successfully screen the product of a 9-foot Dry Pan for Dry Press or two pans for Wire Cut brick on an average clay through an average mesh. Weight, 1,200 pounds.

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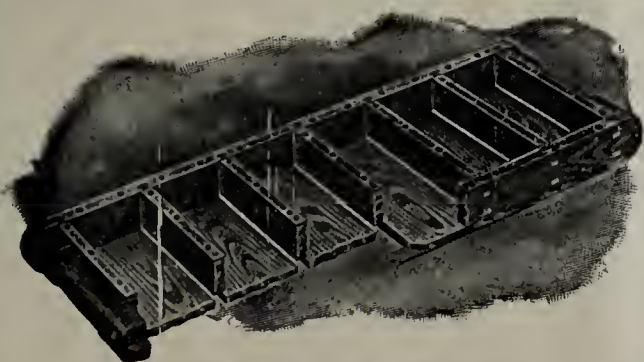
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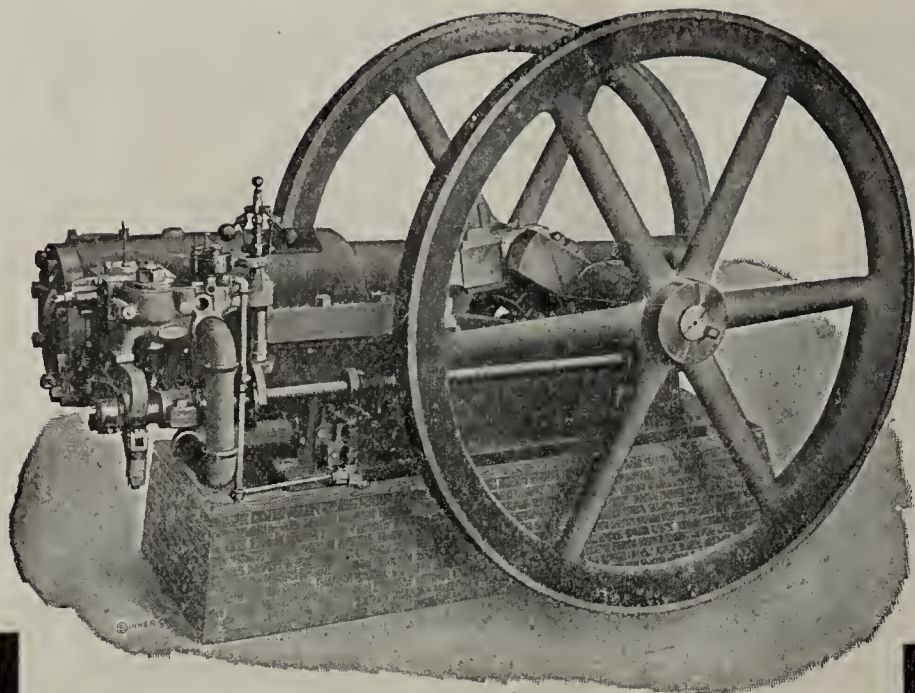
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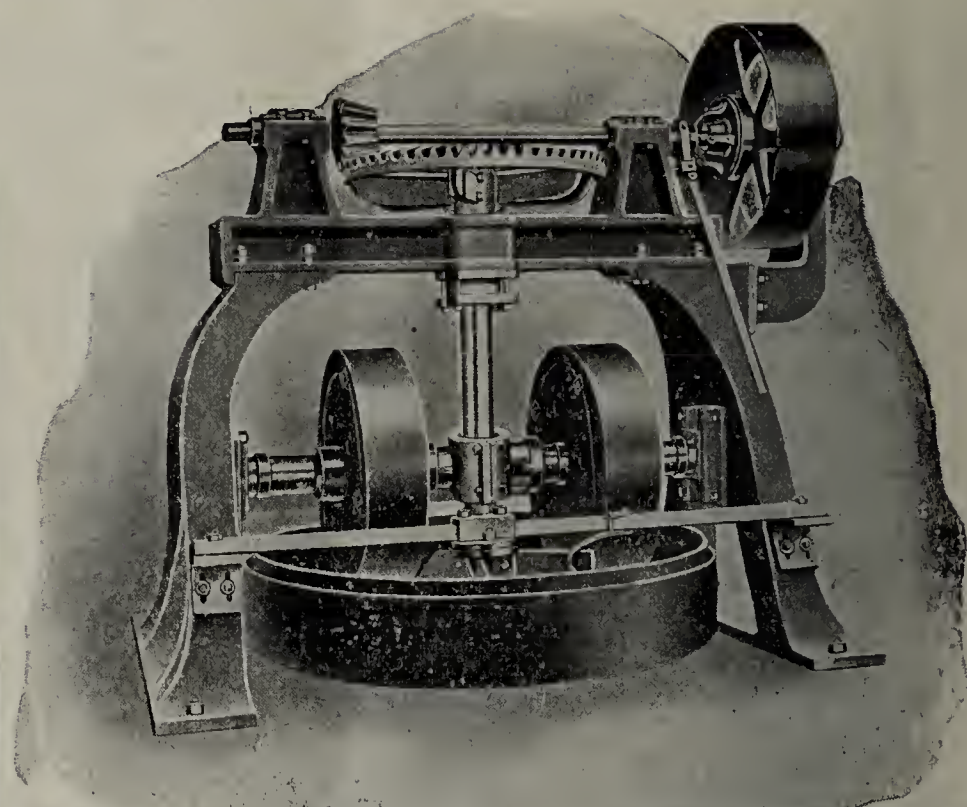


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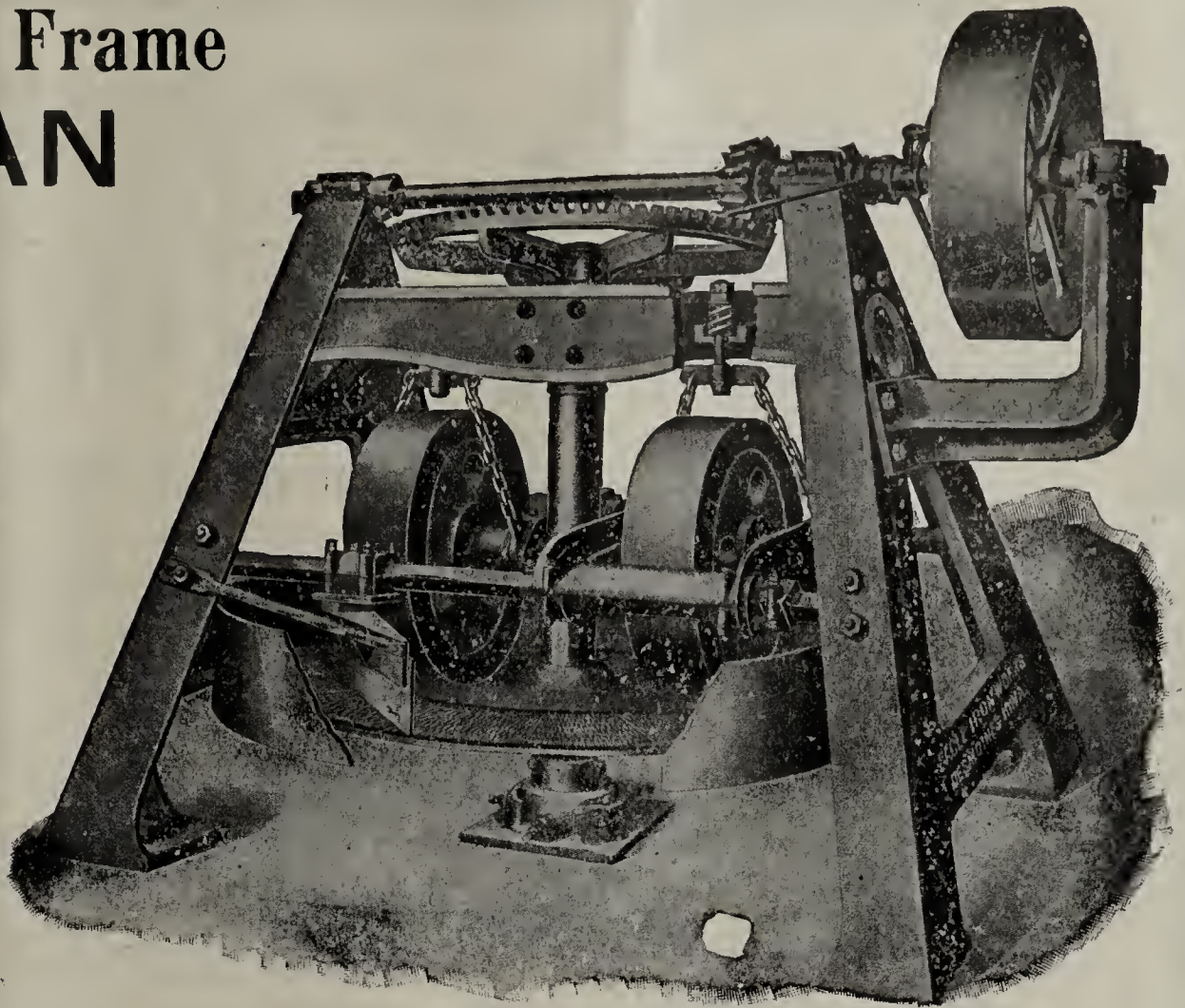
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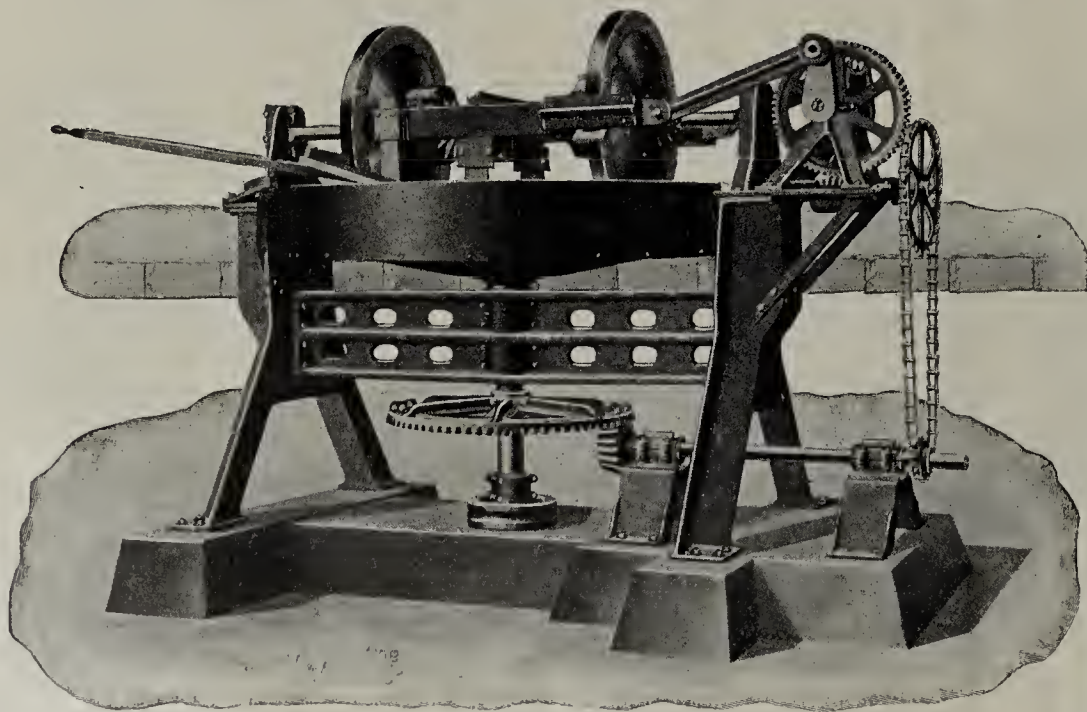
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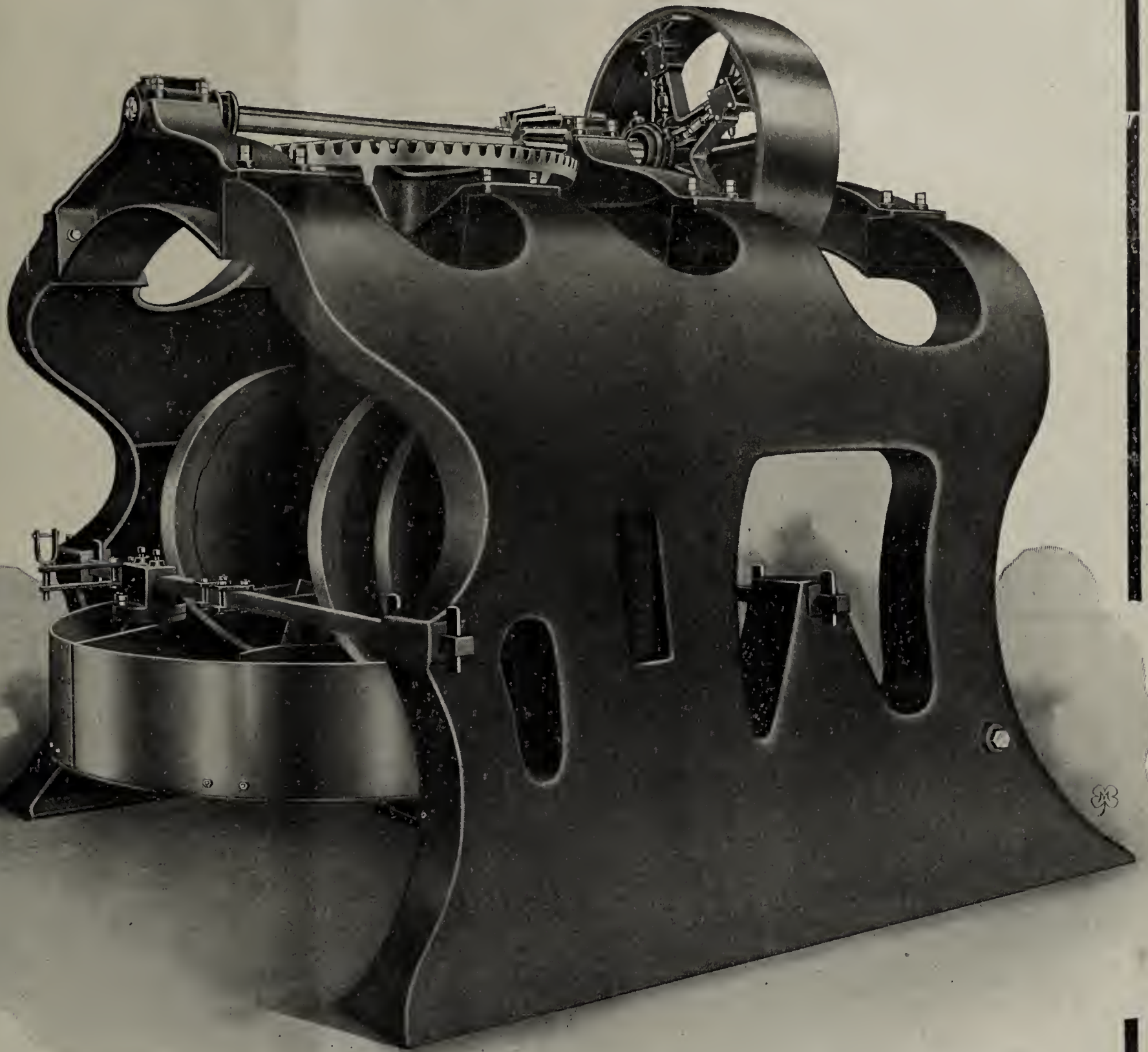
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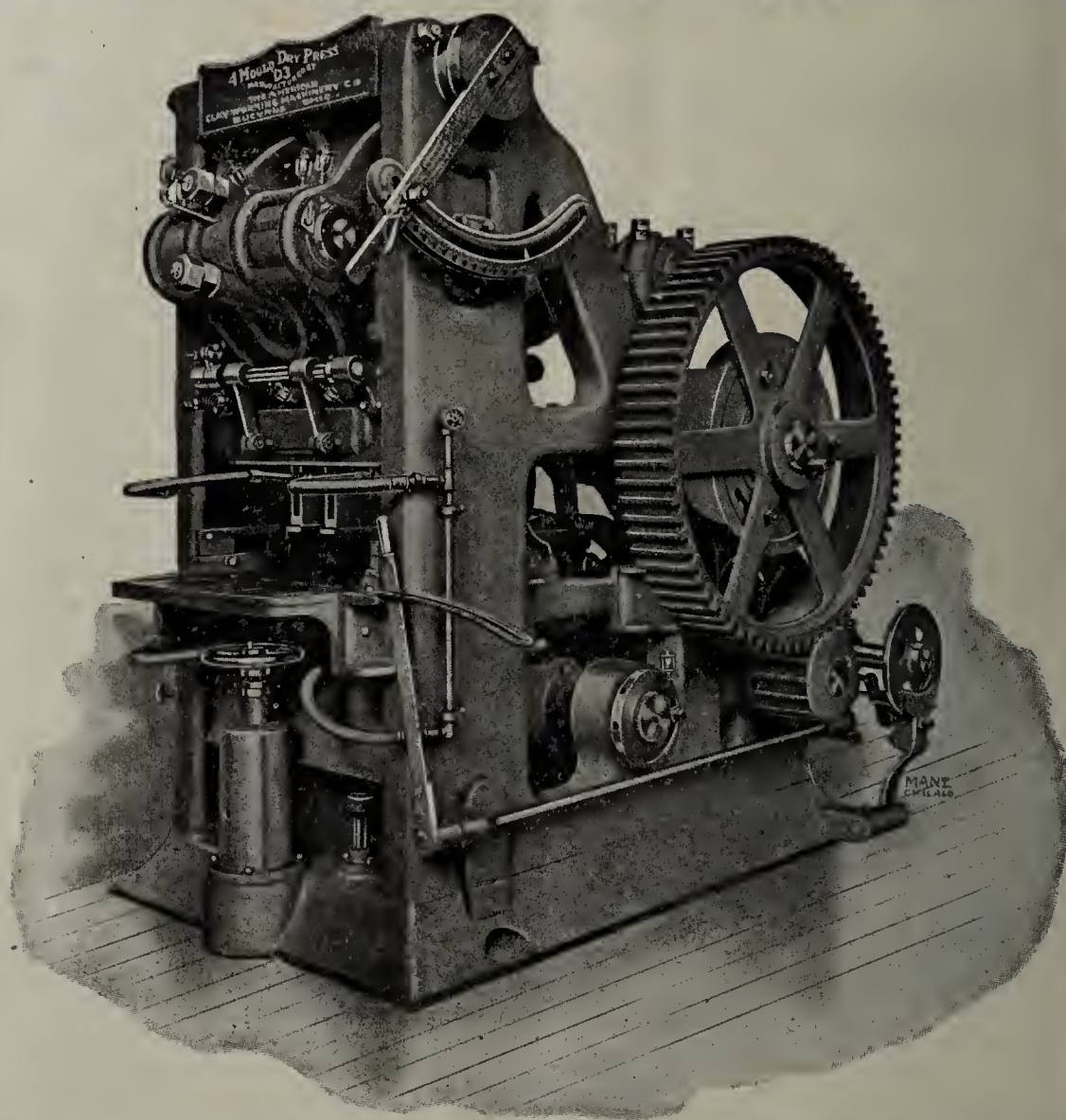
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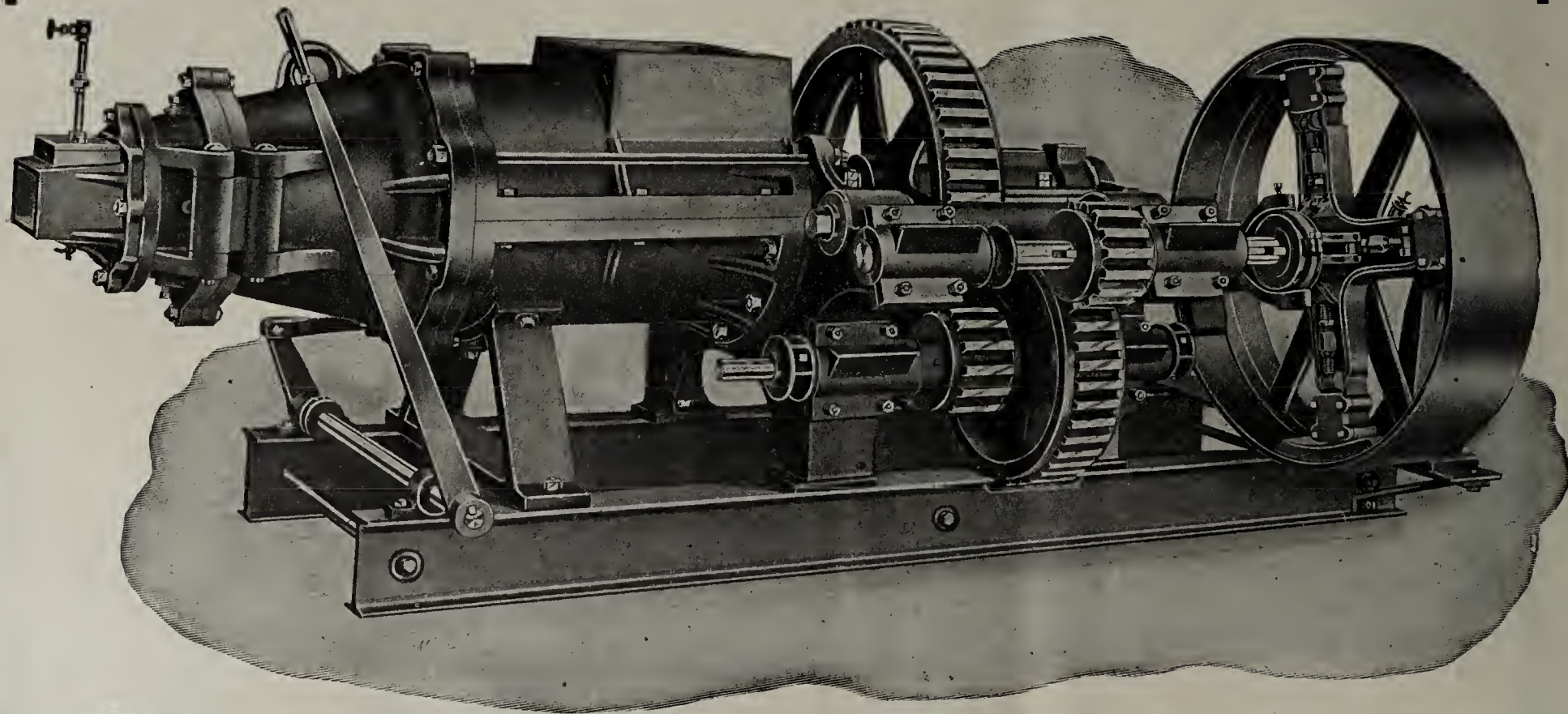


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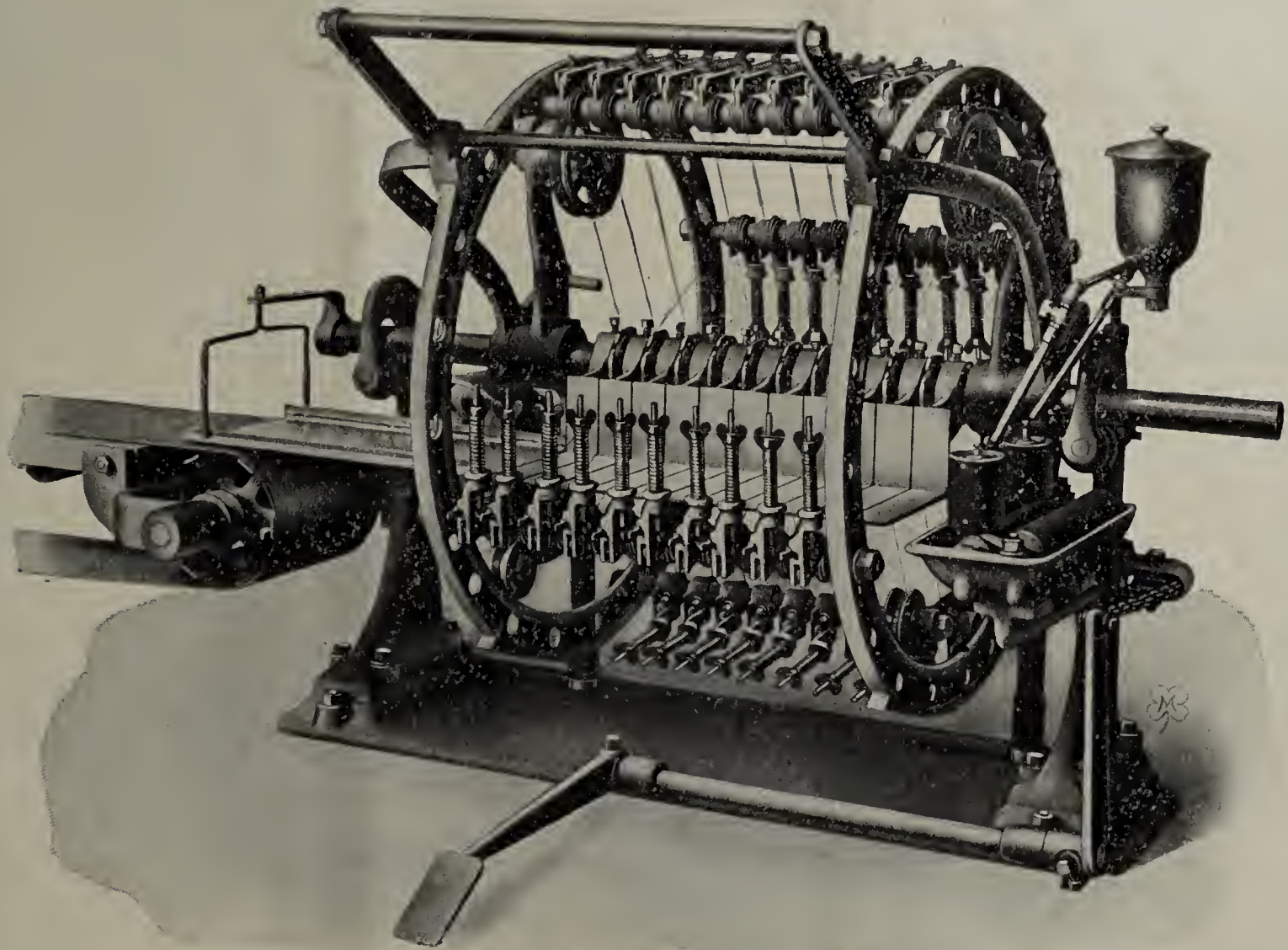


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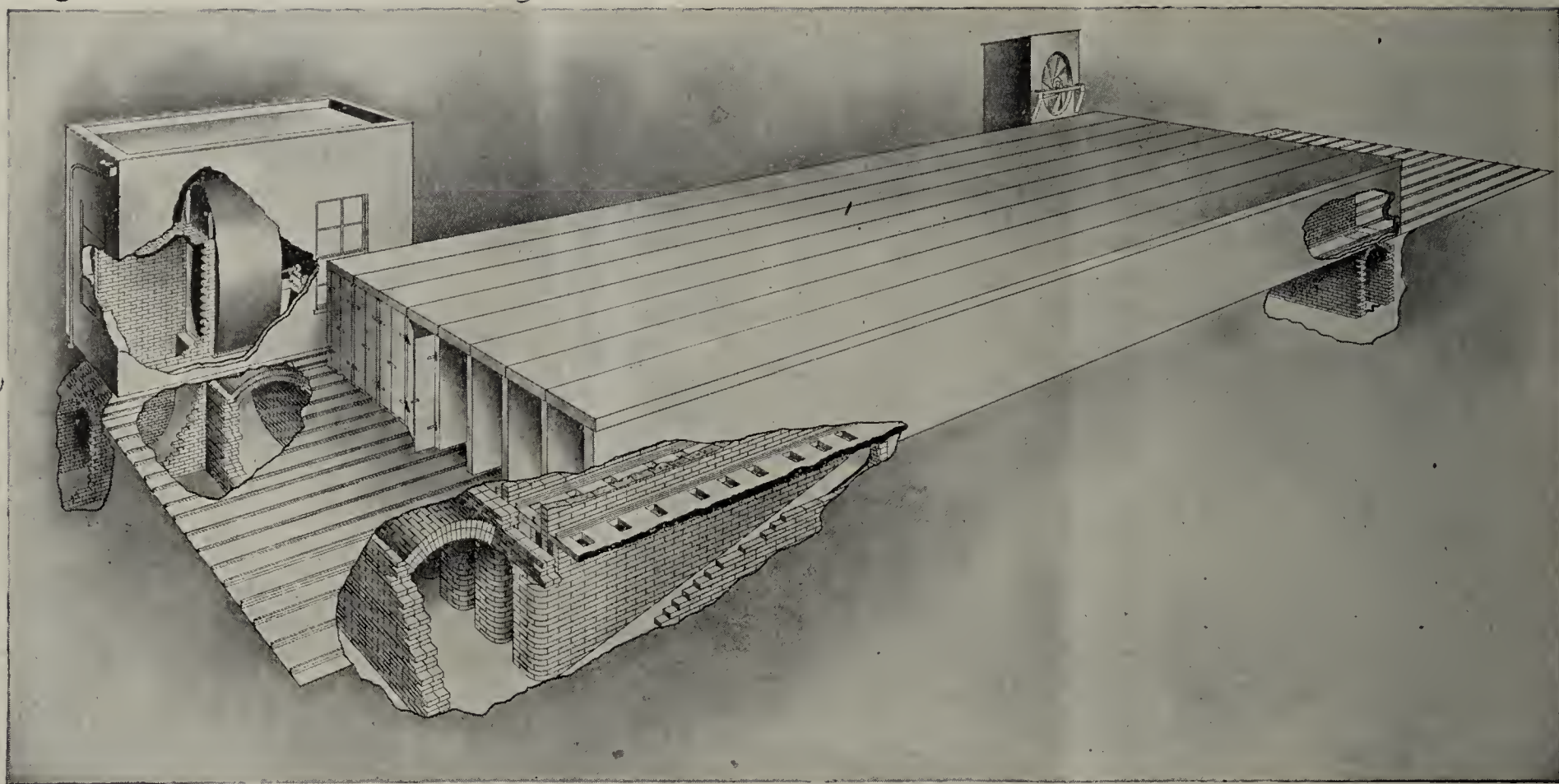
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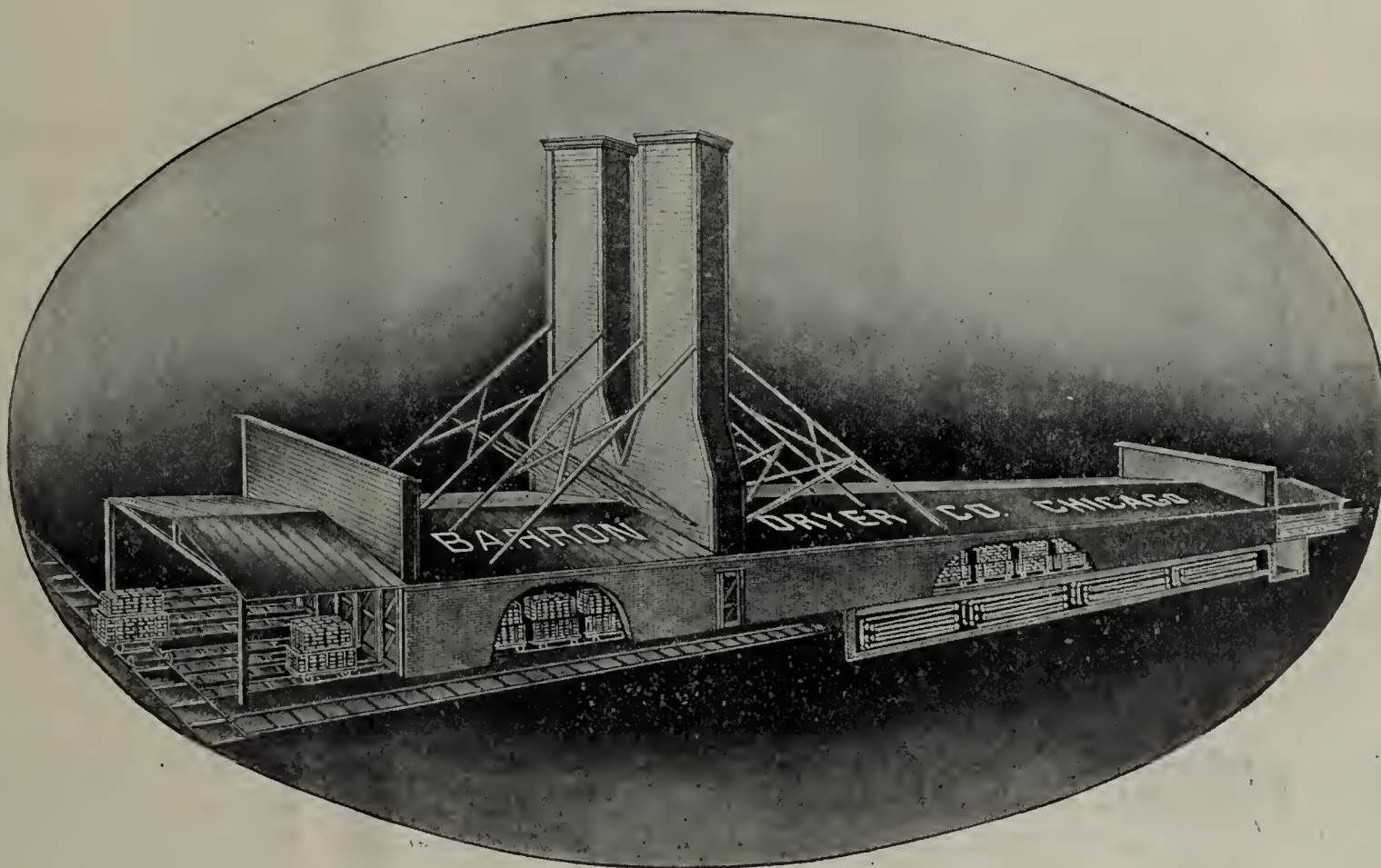
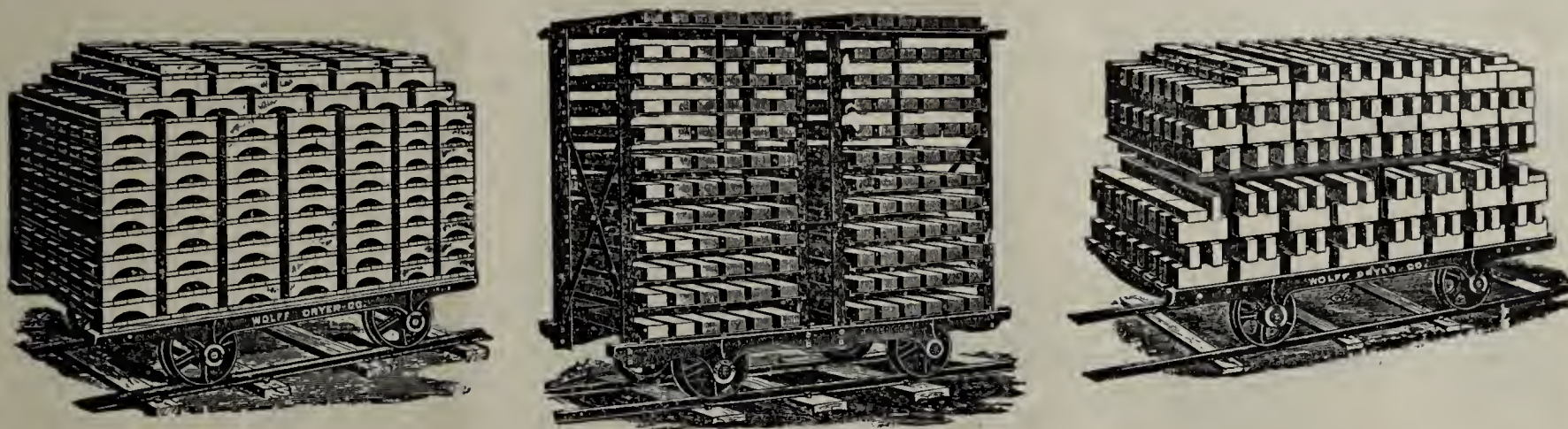
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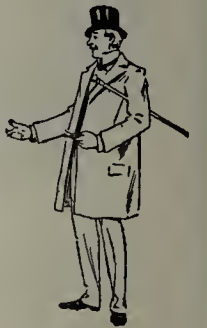
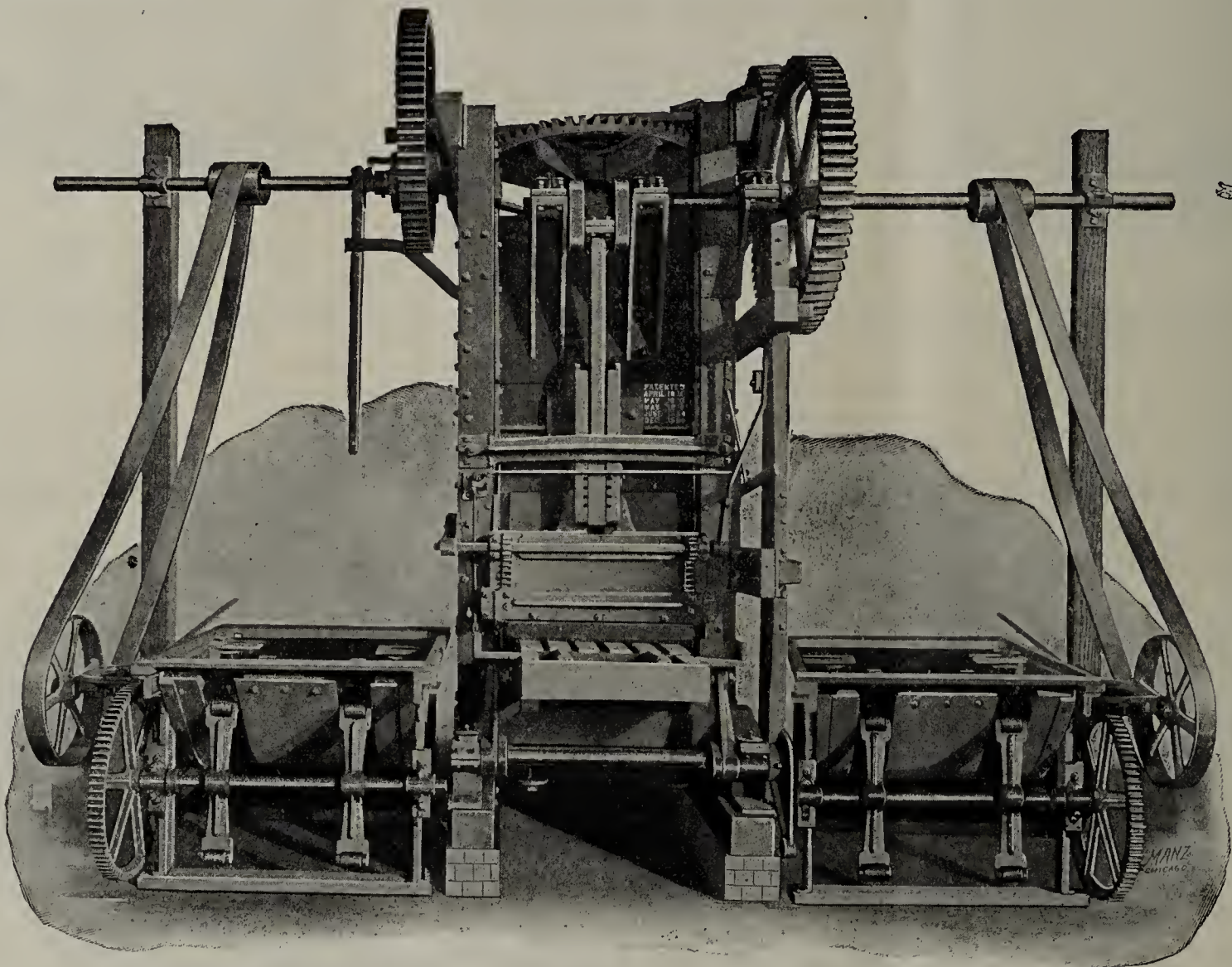
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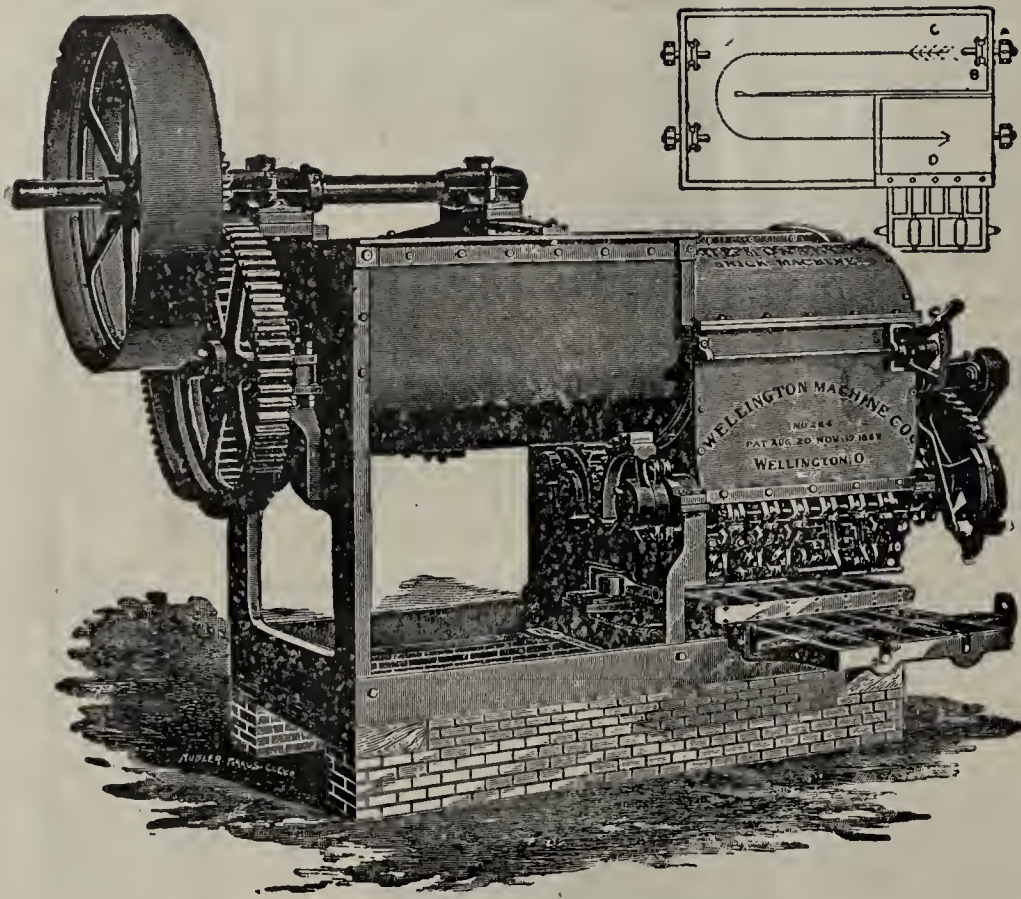
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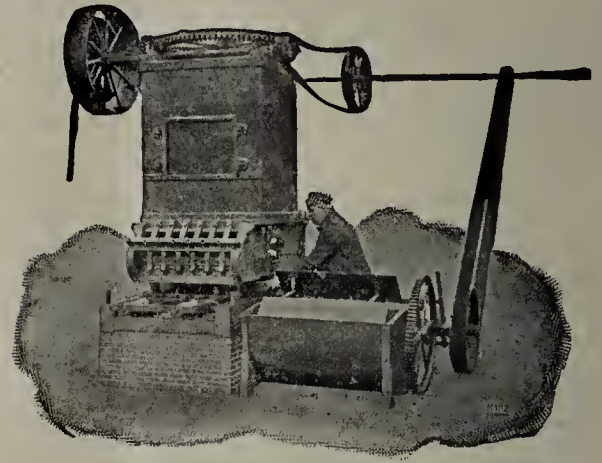
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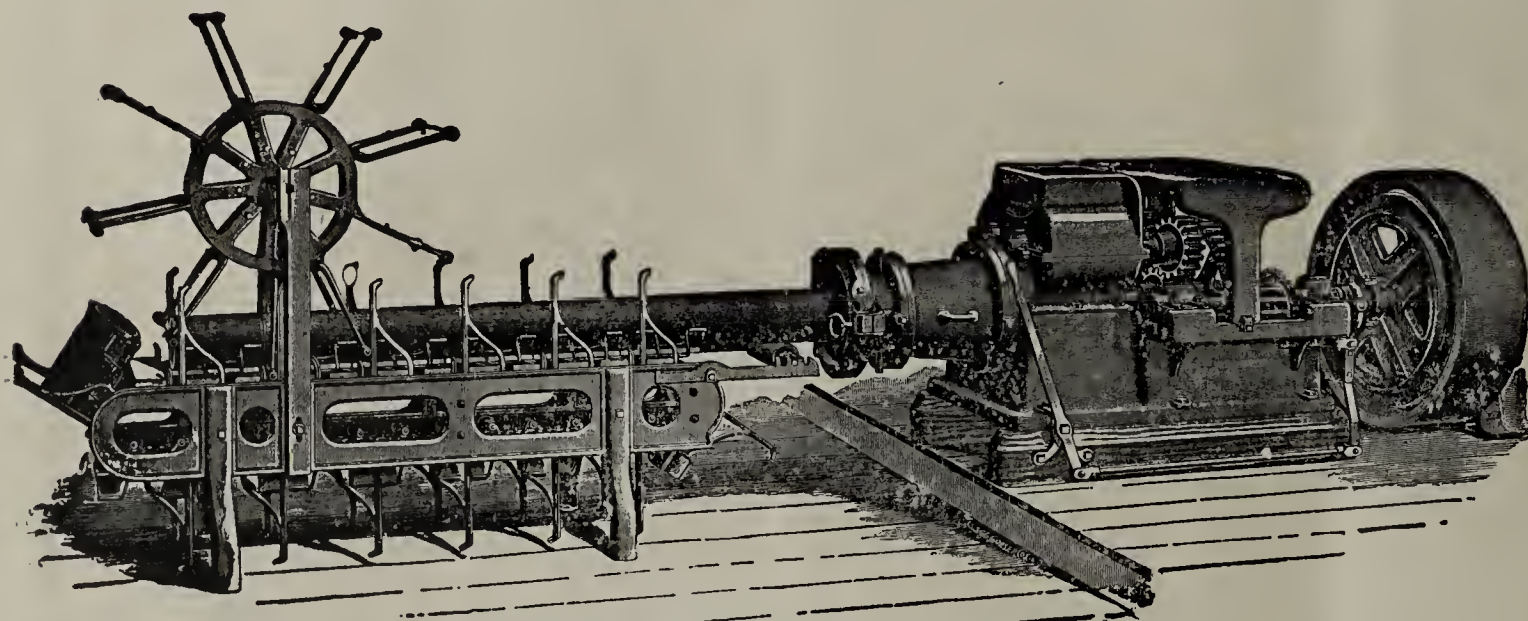
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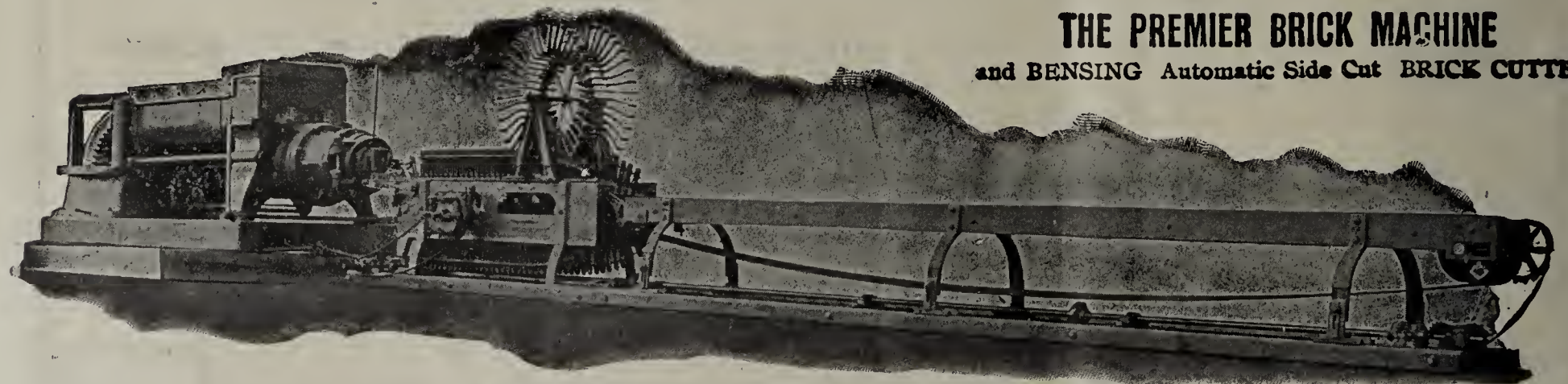


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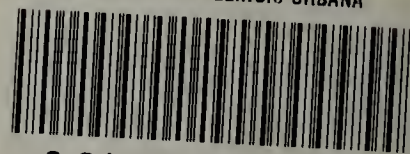


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